THE ANATOMIST's VADE-MECUM:

CONTAINING THE

ANATOMY AND PHYSIOLOGY

OF THE

Human Body.

THE SECOND EDITION,
REVISED AND ENLARGED.

BY ROBERT HOOPER,
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Niſi utile eſt quod facimus, ſtulta eſt gloria.

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TO

WILLIAM CRUICKSHANK, Esq.

SURGEON, F. R. S. &c. &c.

AND

TEACHER OF ANATOMY AND SURGERY,

THIS COMPENDIUM

OF

ANATOMY AND ***PHYSIOLOGY***

IS INSCRIBED,

AS A TESTIMONY OF THE AUTHOR's ESTEEM

FOR

HIS FRIENDSHIP AND PROFESSIONAL ABILITIES.

INTRODUCTION.

It is the intention of the writer in the following Compendium to preſent to the ſtudent a uſeful anatomical conſpectus, or pocket manual of anatomy and phyſiology; giving a ſhort but accurate deſcription of the different parts of the human body and their functions; with a gloſſary, or explanation of the principal terms uſed in that ſcience.

The utility of ſuch a performance will be generally acknowledged, eſpecially when it is conſidered that there is no ſuch work written upon a ſimilar plan.

The motive that induced the author to form and collect together, in one ſmall pocket volume, this elementary production, was his having himſelf experienced the want of ſuch an aſſiſtant when applying to that branch of philoſophy. He, therefore, ſolicits permiſſion to recommend it to ſtudents, not as a work wherein any thing new is to be met with, but merely as their occaſional companion in the proſecution of their ſtudies.

St. Marylebone Infirmary,
January 16, 1800.

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ANATOMY,

ANATOMY,

A SCIENCE which explains the ſtructure and uſe of every part of the human body.

The examination of brute animals, fiſhes, reptiles, plants, polypi, &c. in order to illuſtrate more clearly, or to demonſtrate by analogy the ſtructure and functions of man, is called COMPARATIVE ANATOMY.

Anatomy is divided into nine parts—namely,

Oſteology,	or doctrine of the	Bones.
Syndeſmology,		Ligaments.
Myology,		Muſcles.
Burſalogy,		Burſæ mucoſæ.
Angiology,		Veſſels.
Neurology,		Nerves.
Adenology,		Glands,
Splanchnology,		Viſcera.
Hygrology,		Fluids.

OSTEOLOGY,

OR

DOCTRINE OF THE BONES.

BONES are hard ſubſtances compoſed of animal earth and gluten, which ſupport and form the ſtature of the body, defend its viſcera, and give adheſion to its muſcles. SUBSTANCE. *Compact*, as in the bodies of the long bones; *ſpongy*, as in the extremities of the long bones; and *reticular*, called alſo the *cancelli* of bones, as in the cavities of bones which have marrow. COLOUR. Whitiſh. FIGURE. Various. DIVISION. Long and irregular ſhaped bones are divided into a body and extremities; and flat bones into body and margins. Bones are variouſly NAMED; ſome from their ſituation, as the frontal, parietal, occipital, naſal, malar, &c.; others, from their figure, as the ethmoid bone, clavicle, os cuboides, naviculare, tibia, &c.; and ſome from their uſe, as the ſphænoid bone, the maxillary bone, the femur, &c. The *proceſſes* and *cavities* of bones are named after their figure, as the acetabulum of the os innominatum, the odontoid proceſs of the ſecond cervical vertebra, the coracoid proceſs of the ſcapula, &c.; or from their uſe, as the trochanters of the thigh bone; or from their ſituation, as the naſal, palatine, orbitar proceſſes, &c. &c.

When the bones are deprived of their ſoft parts, and hung together, in their natural ſituation, by means of wire, the whole is termed an *artificial ſkeleton:* but when they are kept together by means of their ligaments, it is called a *natural ſkeleton.*

A Table of the Bones.

				No.	
Bones of the Head.	The bones of the *cranium*, or *ſkull*	Os frontis		1	
		Oſſa parietalia		2	
		Os occipitis		1	
		Oſſa temporalia		2	
		Os ethmoides		1	
		— ſphænoides		1	8
	The bones of the *face*	Oſſa maxillaria ſup.		2	
		— jugalia		2	
		— naſalia		2	
		— lachrymalia		2	
		— palatina		2	
		— ſpongioſa infer.		2	
		Os vomer		1	
		— maxillare infer.		1	14
	Dentes, or *teeth*.	Inciſores		8	
		Cuſpidati		4	
		Bicuſpides		8	
		Molares		8	
		Sapientiæ		4	32
	Bone of the *tongue*, or Os hyoides			1	1
	Bones of the internal *ear*, ſituated within the temporal bone	Malleus		2	
		Incus		2	
		Stapes		2	
		Os orbiculare		2	8
Bones of the Trunk.	The *ſpine*	Vertebræ	Cervical	7	63
			Dorſal	12	
			Lumbar	5	
		Sacrum		1	
		Os coccygis		1	
	The *thorax*	Sternum		1	
		Ribs		24	
	The *pelvis*	Oſſa innominata		2	
				53	

Bones

				No.	
Bones of the Upper Extremities.	The *ſhoulder*		Clavicula -	2	
			Scapula -	2	
	The *arm*		Os humeri -	2	
	The *fore-arm*		Ulna -	2	
			Radius -	2	
	The *hand*	*Carpus*, or *wriſt*	Os naviculare	2	
			lunare	2	
			cuneiforme	2	
			orbiculare	2	
			trapezium	2	
			trapezoides	2	
			magnum	2	
			unciforme	2	
		Metacarpus	- -	10	
		Phalanges	- -	28	54
Bones of the Lower Extremities.	The *thigh* -		Os femoris -	2	
	The *leg* -		Patella -	2	
			Tibia -	2	
			Fibula -	2	
	The *foot*	*Tarſus*	Os calcis -	2	
			aſtragalus -	2	
			cuboides -	2	
			naviculare	2	
			cuneiformia	6	
		Metatarſus	- -	10	6
		Phalanges	- -	28	[illegible]
				240	
Seſamoid bones of the thumb and great toe, occaſionally found - -				8	
			Total	248	

The ſkeleton is divided into head, trunk, and extremities.

OF

OF THE HEAD.

The head is divided into the cranium and face.

OF THE CRANIUM, OR SKULL.

Shape. Various, according to the cuſtoms of different nations, the bones of the child being ſo tender as to be moulded into almoſt any form. It is **composed** of eight bones—viz. one os frontis, which forms the forehead; two oſſa parietalia, ſituated at the upper part and ſides of the head; two oſſa temporum, placed below the parietal bones; one occipital, forming the back part of the head; one ſphænoidal, placed in the middle of the baſis of the cranium; and one ethmoid, ſituated behind the root of the noſe.

Upon viewing the ſuperior part of a ſkull externally, ſeveral zigzag lines are obſervable: that which extends from one temple acroſs over the head to the other temple is termed the *coronal ſuture;* it unites the frontal bone to the two parietal: that which proceeds from behind one ear upwards acroſs to the other is the *occipital* or *lambdoidal ſuture;* it unites the occipital bone to the two parietal: and the ſuture which extends upon the crown of the head, from the lambdoidal to the coronal, uniting the two parietal bones, is called the *ſagittal.* They are ſometimes termed the *true ſutures,* to diſtinguiſh them from two *ſpurious* or *ſquamous*, which are found, one on each ſide of the cranium, extending from the temple backwards, in the form of an arch, and uniting part of the temporal bone to the parietal. There are, ſometimes, one or more triangular-ſhaped bones obſerved in the courſe of ſome of the ſutures; theſe are called *oſſicula triquetra*, *triangularia*, or *Wormiana*. Beſides theſe ſutures, there are ſeveral *prominences* upon the upper part of the cranium; two in the frontal bone, one immediately over each eye between it and the ſuture; one in the middle of each parietal bone; and one in the middle of the occipital: theſe eminences point out the centre of oſſification of thoſe bones.

Upon the internal ſurface of the upper part of the cranium there are a number of *grooves*, in an arboreſcent form; they are made by the ſpinous artery of the dura mater. The ſutures are here ſeen in the form of a line, not dove-tailed, and the whole ſurface appears more poliſhed than the external.

The bones forming the upper part of the ſkull, or, as it is ſometimes called, the calvaria, are compoſed of an *external* and an *internal table*, which are of a compact ſtructure, and of a ſpongy intervening ſubſtance, called the *meditullium*, or *diploë*.

The internal ſurface of the baſis of the cranium is divided naturally into eight conſiderable *depreſſions*, adapted to the lobes of the brain and cerebellum,

bellum. The two *anterior* are immediately over the orbits, and are ſeparated from each other by an obvious eminence, above the root of the noſe, called *criſta galli.* Immediately before this eminence is a ſmall hole, called the *foramen cæcum*; and on each ſide of it are a number of perforations, which tranſmit the olfactory nerves into the noſe; they are called the *foramina cribroſa.* Paſſing backwards, there are two round holes, near each other, one going to the bottom of each orbit; theſe are for the paſſage of the optic nerves, and are called *foramina optica:* beyond theſe holes there is a ſmall cavity, which will admit the end of one's little finger, ſurrounded by four proceſſes, two of which are *anterior* and two *poſterior;* theſe are termed *clinoid proceſſes*, and the cavity in their middle, which contains the pituitary gland, the *ſella turcica.* Under each anterior clinoid proceſs is a conſiderable fiſſure, the *foramen lacerum orbitale ſuperius*, which communicates with the orbit, and tranſmits the third, fourth, the firſt branch of the fifth, and the ſixth pair of nerves, and the ophthalmic artery. Beyond this fiſſure, proceeding backwards, there is a round and then an oval hole; the firſt is the *foramen rotundum*, through which the ſecond branch of the fifth pair of nerves paſſes; the other, the *foramen ovale*, for the paſſage of the third branch of the fifth pair of nerves. Contiguous to the foramen ovale is a ſmall hole, the *foramen ſpinoſum*, through which the ſpinous artery of the dura mater enters. Between the foramen ovale and the poſterior clinoid proceſs, on each ſide of the ſella turcica, there is a conſiderable ragged aperture, the *carotid canal*, which is partly filled up with cartilage in the freſh ſubject, and is for the entrance of the carotid artery and the exit of the great intercoſtal nerve. A projecting portion of bone next preſents itſelf, called the *petrous portion* of the temporal bone: it has upon its poſterior ſurface an oval opening, the *meatus auditorius internus*, through which the nerve for the organ of hearing, and the facial nerve, enter. Immediately below this is an irregular oval opening, formed by the junction of the occipital with the temporal bone; this is the *foramen lacerum in baſi cranii:* through the anterior part paſſes the eighth pair of nerves, and the poſterior part tranſmits the blood from the lateral ſinus of the dura mater, whoſe courſe is marked by a *deep groove* leading to the foramen lacerum, into the jugular vein. The portion of bone which proceeds backwards from the poſterior clinoid proceſſes, between the petrous portions of the temporal bone, is the *cuneiform proceſs* of the occipital bone; it is ſomewhat *hollowed* for the reception of the medulla oblongata, which lies upon it. At the bottom of this proceſs of bone is a conſiderable opening, called the *foramen magnum occipitale;* it tranſmits the ſpinal marrow, the vertebral arteries, and the acceſſory nerves of Willis, and a proceſs of the ſecond vertebra of the neck lies in its anterior part. Between this opening and the foramen lacerum in baſi cranii is the *foramen condyloideum anterius*, which gives paſſage to the lingual pair of nerves. Beyond the great occipital foramen is a *crucial eminence*, to which proceſſes of the dura mater are attached; the horizontal eminence ſeparates the two *ſuperior occipital cavities* from the two *inferior*.

FRONTAL BONE.

SITUATED in the anterior part of the ſkull, forming the forehead and upper part of the orbits. FIGURE like a cockle-ſhell. PROCESSES. Two *frontal eminences*, which mark the centres of oſſification; two *frontal tuberoſities*, which are ſituated over the frontal ſinuſes; two *ſuperciliary ridges* or *arches*, which give origin to the frontal muſcles, and whoſe extremities are called the angular or orbitar proceſſes; an *external frontal ſpine*, upon which the oſſa naſi reſt; an *internal frontal ſpine*, to which the dura mater adheres; and two *orbitar plates*, which ſeparate the orbits from the cavity of the cranium. CAVITIES. The *cerebral cavity*, which contains the anterior portions of the hemiſpheres of the brain: a large *notch* between the orbitar plates for the ſituation of the cribriform plate of the ethmoid bone; two *frontal* or *pituitary ſinuſes* within the bone, above the root of the noſe; two *orbital cavities*, in which are two depreſſions for the ſituation of the lachrymal gland; a *notch* in each ſuperciliary ridge for the trochlea of the ſuperior oblique muſcle; a *ſuperciliary foramen*, through which paſſes the frontal artery and nerve; the *foramen cæcum*, ſituated below the beginning of the internal frontal ſpine. CONNEXION. The frontal bone is connected with the two parietal by means of the coronal ſuture; with the two oſſa naſi, the two ſuperior maxillary bones and the two lachrymal bones, by means of what is called the *tranſverſe ſuture;* with the ſphænoid bone by means of harmony, called *harmonia ſphænoidalis;* with the ethmoid bone by *harmonia ethmoidalis*, and with the os jugale, by means of ſuture. The USE of the frontal bone is to conſtitute the forehead, pituitary ſinuſes, part of the orbit, and to contain and defend the anterior lobes of the brain.

PARIETAL BONES.

SITUATION. One on each ſide of the ſuperior part of the cranium. FIGURE. Arched, and ſomewhat quadrangular. DIVISION. Into an *external* and an *internal ſurface* and four *angles*, viz. the *frontal*, *ſphænoidal*, called alſo the *ſpinous proceſs*, the *occipital* and *maſtoid.* CAVITIES. A *ſemicircular ridge*, from which the temporal muſcle originates; and the *foramen parietale*, which is near the ſagittal ſuture, and tranſmits an artery and a vein of the dura mater. Upon its internal ſurface are the *grooves of the ſpinous artery;* and when the two bones are united, there is a deep *cavity* extending along the ſagittal ſuture, for the longitudinal ſinus of the dura mater. Each parietal bone is CONNECTED with its fellow by means of the ſagittal ſuture; with the frontal bone by the coronal ſuture; with the occipital by the lambdoidal ſuture; and with the temporal by the ſquamous ſuture. The USE of theſe bones is, to form the ſuperior part of the cranium. —SYNONIMS. Oſſa verticis, ſyncipitis, verticalia vel bregmatis.

OCCIPITAL BONE.

SITUATION. In the poſterior part of the cranium. FIGURE. Quadrate oblong. EXTERNAL PROCESSES. The *occipital tubercle*, in the middle of the bone to which the ligamentum nuchæ adheres; a *tranſverſe ſpine*, proceeding from each ſide of the tubercle, to which the trapezius and complexus muſcles are attached; a *leſſer tranſverſe ſpine*, below the former, for the inſertion of the recti muſcles; a *prominent ridge* running downwards from the occipital tubercle, and forming, with the above-mentioned ridges, a *crucial ſpine;* the *cuneiform* or *baſilary proceſs*, ſituated before the great foramen; two *condyloid proceſſes* or *condyles*, which are united to the firſt vertebra of the neck.

INTERNAL PROCESSES. An *internal crucial ſpine:* the ſuperior branch gives adheſion to the longitudinal ſinus of the dura mater, the two lateral, to the lateral ſinuſes and the inferior to the ſeptum cerebelli. CAVITIES. The *foramen magnum occipitale*, through which the ſpinal marrow proceeds into the ſpine, and the vertebral arteries and acceſſory ſpinal nerves into the cranium; two *anterior condyloid foramina*, for the paſſage of the lingual pair of nerves; two *poſterior condyloid foramina* (which are ſometimes wanting), for the paſſage of the occipital vein into the lateral ſinus; two *notches*, which, with two correſponding notches of the temporal bones, form the *foramina lacera in baſi cranii*, for the paſſage of the blood from the laternal ſinuſes into the jugular vein and the exit of the par vagum; a conſiderable *groove* leading to the above notches, in which the lateral ſinuſes are ſituated. The internal ſurface has alſo four conſiderable *depreſſions* formed by the *crucial ſpine;* the two ſuperior contain the poſterior lobes of the brain, and the two inferior, the two lobes of the cerebellum. CONNEXION. The occipital bone is connected by the cuneiform proceſs to the ſphænoid bone, in the adult by ſynoſtoſis; hence Profeſſor Sœmmering deſcribes them as one bone, *os occipito-ſphænoidale;* but in youth by ſynchondroſis; with the two parietal and two temporal bones by the lambdoidal ſuture; with the firſt vertebra of the neck by ginglymus, and with the ſecond by ſyndeſmoſis. The USE of the occipital bone is to conſtitute the poſterior and inferior part of the cranium; to contain the poſterior lobes of the brain, the cerebellum and medulla oblongata, and to ſerve for the articulation of the head with the ſpine. SYNONIMS. Os baſilare, os memoriæ, and os nervoſum.

SPHÆNOID BONE.

SITUATED in the middle of the baſis of the cranium, extending underneath from one temple acroſs to the other. FIGURE. Irregular, compared to a bat with its wings extended. EXTERNAL PROCESSES. Two *alæ majores,* whoſe anterior part forms a portion of the orbit; the inner ſurface has lying upon it a portion of the middle lobe of the brain, and the whole external ſurface is covered by the temporal muſcle. Two *ſpinous proceſſes,* a narrow point projecting behind each foramen ſpinoſum. The *ſphænoidal ſpine,* or *azygous proceſs,* upon which the baſis of the vomer lies. Two *pterygoid proceſſes,* each of which is diſtinguiſhed into a root and two extended plates, or wings; one external, which gives origin on its external ſurface to the pterygoideus externus muſcle, and on its internal ſurface to the pterygoideus internus muſcle; and the other internal. Two *hamular* or *hook-like proceſſes,* one on the end of the internal wing of each pterygoid proceſs, over which the tendon of the circumflexus or tenſor palati muſcle turns. INTERNAL PROCESSES. Two *alæ minores*, which form the upper part of the ſuperior orbital fiſſures. Four *clinoid proceſſes*, two *anterior*, and two *poſterior*. EXTERNAL CAVITIES. The *ſphænoidal pituitary ſinus*, which is in the middle of the bone, has a communication with the noſtrils, and is divided by an intermediate ſeptum. Two *pterygoid depreſſions*, one between each greater and leſſer wing, for the reception of a part of the palate bone. Two *foramina*, each leading to a canal, called the *pterygoid* or *Viduan canal*, in the root of the pterygoid proceſs, through which the recurrent or Viduan branch of the fifth pair of nerves paſſes into the cranium. INTERNAL CAVITIES. The *ſella turcica*, or *ephippium*, which is ſurrounded by the four clinoid proceſſes, and contains the pituitary gland. Two *foramina optica*, one before each anterior clinoid proceſs, which tranſmit the optic nerves. Two *grooves*, one on each ſide of the ſella turcica, between the anterior and poſterior clinoid proceſſes, formed by the pulſation of the carotid arteries. Two *foramina lacera orbitalia ſuperiora*, between each greater and leſſer wing, through which the third, fourth, firſt branch of the fiſth, and the ſixth pair of nerves, and the ophthalmic artery paſs out of the cranium. Two *foramina rotunda*, for the paſſage of the ſecond branch of the fifth pair of nerves. Two *foramina ovalia*, for the third branch of the fifth pair. Two *foramina ſpinoſa*, through which the ſpinous artery of the dura mater enters the cranium. The ſphænoid bone is CONNECTED with all the bones of the cranium; with the frontal, the ethmoid, the two parietal, and the two temporal by harmony, and with the occipital by ſynoſtoſis: it is alſo united to the two cheek bones, the two ſuperior maxillary bones, and the two palate bones, by harmony, and to the vomer by gomphoſis. Its USE is to form the baſis of the cranium, to concur in forming the orbits, the pituitary ſinuſes of the noſe, the temples, &c. and to contain the middle lobes of the brain. SYNONIMS. Os multiforme, os cuneiforme, os pterygoideum.

TEMPORAL BONES.

SITUATION. At the ſides and inferior part of the cranium. FIGURE. Irregular. DIVISION. Into a ſquamous portion, which is flat, and forms the ſquamous ſuture; and a petrous portion, which is very irregular, and is ſituated in the baſis of the ſkull. PROCESSES. The *zygomatic proceſs*, which, with a proceſs of the os jugale, forms the *zygoma*, yoke, or arch of the temples, underneath which the temporal muſcle moves, and from whoſe lower edge ſeveral muſcles of the face ariſe, particularly the maſſeter and zygomatic. The *maſtoid* or *mammary proceſs*, which projects from under the ear, and has inſerted into its anterior part the ſterno-cleido-maſtoideus muſcle, and into its poſterior part the complexus, the obliquus, and trachelo-maſtoideus. The *ſtyloid proceſs*, which is long and pointed, and gives origin to a ligament of the os hyoides, alſo to the ſtylo-hyoideus, ſtylo-pharyngeus, and ſtylo-gloſſus muſcles. The *vaginal proceſs*, which ſurrounds the root of the ſtyloid. The *auditory proceſs*, or outer bony circle of the auditory paſſage, to which the membrana tympani and cartilage of the ear are fixed. CAVITIES. The *meatus auditorius externus*, which leads to the cavity of the organ of hearing. The *meatus auditorius internus*, which begins on the internal and poſterior ſurface of the petrous portion, and tranſmits the ſeventh pair of nerves; it has immediately within it the internal opening of the aqueduct of Fallopius. Each temporal bone is CONNECTED with the parietal by the ſquamous ſuture; with the occipital by the lambdoidal ſuture; with the ſphænoid and jugal bones by harmony, and with the lower jaw by arthrodia. SUBSTANCE. The ſquamous portion conſiſts of two tables and a diploë; the mammary proceſs of cells which communicate with the cavity of the organ of hearing; and the petrous portion is very hard and compact. USE. To contain the middle lobes of the brain, and the organ of hearing; and to concur in forming the temples and the baſis of the cranium.

ETHMOID BONE.

Situation. In the anterior part of the baſis of the cranium, above the root of the noſe and between the orbits. **Figure.** Cube-like. **Processes.** A *cerebral* or *cribriform plate*, which lies horizontally above the root of the noſe within the cavity of the cranium: it is every where perforated by a number of ſmall foramina, through which the olfactory nerves paſs into the cavity of the noſtrils. The *criſta galli*, a proceſs ſomewhat like a cock's comb, which proceeds upwards from the middle of the cribriform plate, and has attached to it the falciform proceſs of the dura mater. Two *orbitar plates*, called alſo *oſſa plana*, and *plana papyracea*, which are very ſmooth externally, and form the inner ſide of the orbits. The *ſeptum ethmoidale*, *naſal plate*, *azygous proceſs*, or *perpendicular lamina*, a conſiderable proceſs, deſcending directly under the criſta galli into the cavity of the noſe, and forming with the vomer the ſeptum narium. Two *cavernous ſubſtances*, which are curled, like a piece of parchment, one on each ſide of the ſeptum, called the ſuperior turbinated, or ſpongy bones. **Cavities.** A number of *cribriform foraminula*, ſituated on each ſide of the criſta galli. Two *foramina orbitalia naſi*, one ſituated in the line of union between the frontal bone and orbitar plate of the ethmoid, for the paſſage of the naſal branch of the orbital nerve. A number of *cells*, which compoſe the internal part of the bone, and form the pituitary ſinuſes of the ethmoid bone. The ethmoid bone is CONNECTED with the os frontis, the two naſal bones, the two ſuperior maxillary, the two palatine, the ſphænoid bone, and the vomer by harmony. USE. To form an extenſive ſurface for the organ of ſmell, to conſtitute part of the noſe, orbits, and cranium.

OF THE FACE.

The bones of the face are fourteen in number, and are DIVIDED into thoſe of the upper and under jaw. The upper jaw is formed of thirteen bones, viz. two ſuperior maxillary, two naſal, two palatine, two jugal, or malar, two inferior ſpongy, two lachrymal, and the vomer, which are united to the cranium, and with one another, by harmony. The under jaw conſiſts of one bone.

There is an obvious *line*, beginning at the externa angle of the orbit, where the frontal bone is united to the cheek bone, which leads to the inferior opening in the orbit, proceeds upwards to the noſe, whoſe root it croſſes, and then traverſes the othe orbit to the external angle: this is called th *tranſverſe ſuture*. The other harmonies of the fac are named after the bones which they unite, a the *zygomatic*, *naſal*, *palatine harmonies*, &c.

SUPERIO

SUPERIOR MAXILLARY BONES.

Situated in the anterior and middle part of the face. **Figure.** Irregular. **Processes.** The naſal proceſs, which forms the ſide of the noſe. The *orbitar proceſs*, or *plate*, which forms part of the orbit. The *malar proceſs*, by which it is united to the cheek-bone. The *alveolar proceſs*, in which the teeth are ſituated. The *palate proceſs*, which forms the palate. A *ſpine*, formed by the union of each palate portion, upon which the vomer reſts. The *orbital margin*. **Cavities.** The *antrum maxillare*, called alſo, *antrum Highmori* and *ſinus maxillaris pituitarius*, in the body of the bone, between the orbital and palate proceſſes; it has an opening into the noſtrils. The *infra-orbital canal*, which opens under the margin of the orbit, and tranſmits the infra-orbital nerve. The *lachrymal depreſſion*, ſituated in the ſuperior and internal part of the naſal proceſs, for the ſituation of the lachrymal ſac; it leads to the *canalis naſalis*, which conveys the tears into the noſtrils. The *poſterior palatine foramen*, near the laſt tooth on the inſide, for the paſſage of the alveolar nerve. A *notch* on the anterior part of the palatine proceſs, which with the correſponding notch of the other ſuperior maxillary bone, forms the *foramen palatinum anticum*, or *foramen inciſivum*, which tranſmits the anterior palatine nerve and artery. Connexion. Each ſuperior maxillary bone is connected with its fellow, with the os frontis, one os naſi, one lachrymal bone, the ethmoid, ſphænoid, one os jugale, one palatine bone, and one inferior ſpongy bone, by harmony, and with the vomer and teeth by gomphoſis. Use. The uſe of theſe bones is to form part of the face, palate, noſe, noſtrils, and orbits, and to afford a convenient ſituation for the organ of maſtication.

JUGULAR, OR MALAR BONES.

Situation. At the ſides of the face. Figure. Almoſt quadrate. Processes. The *upper orbitary proceſs*, which forms part of the orbit and the ſharp edge of the temple. The *inferior orbitary proceſs*, oppoſite to the former, and conſtituting in part the bottom of the orbit and the edge of the cheek. The *internal orbitary proceſs*, which alſo forms a part of the orbit. The *maxillary proceſs*, by which it is joined to the ſuperior maxillary bone. The *zygomatic proceſs*, which is joined to the temporal bone, to form the zygoma. Connexion. The os jugale is united to the frontal, ſuperior maxillary, ſphænoid and temporal bone. The use of theſe bones is to aſſiſt in forming the face and orbits.

OSSA NASI, OR BONES OF THE NOSE.

SITUATED in the ſuperior and middle part of the noſe. FIGURE. Quadrangular and oblong. SUBSTANCE. Compact. USE. To form the bridge and external part of the noſe. Each bone is CONNECTED with its fellow, and the ſuperior maxillary bone by harmony and with the frontal and ethmoid by the tranſverſe ſuture.

LACHRYMAL BONES.

SITUATION. In the internal angle of the orbit. FIGURE, like the nail of the finger. CAVITIES. A groove, which holds the lachrymal ſac. SYNONIM. Os unguis. CONNEXION. Each bone is connected with the frontal, ethmoid, ſuperior maxillary and inferior ſpongy bone by harmony.

INFERIOR SPONGY BONES.

SITUATED in the ſide and lower part of the noſtrils. FIGURE. Spiral, and convoluted. USE. To augment the ſurface of the organ of ſmelling. CONNEXION. Each bone is united with the ſuperior maxillary, the palate, lachrymal and ethmoid bone by harmony. SYNONIMS. Oſſa turbinata inferiora, conchæ inferiores.

PALATINE BONES.

SITUATED in the poſterior part of the noſe, from which they aſcend laterally to the orbits.

Figure. Irregular. **Division.** Into palatine, pterygoid, naſal, and orbital portions. **Processes.** The *palatal plate*, which forms the poſterior part of the roof of the mouth. The *pterygoid proceſs*, which is ſituated behind the laſt grinder. The *naſal proceſs*, which ariſes perpendicularly from the palate, and covers a part of the antrum of Highmore. The *orbitary proceſs*, which is ſituated in the orbit. **Cavities.** The *palatine cells*, which communicate with, and form part of the ſphænoid cells. **Use.** To form the poſterior part of the palate and part of the noſe and orbit. Each bone is **connected** with its fellow, with the ſuperior maxillary bone, the ſphænoid, ethmoid, inferior ſpongy bone and vomer by harmony.

VOMER.

Situated in the middle of the cavity of the noſtrils, which it divides into two parts. **Figure.** It reſembles a ploughſhare. **Use.** To ſuſtain and divide the cavity of the noſtrils. **Connexion.** Superiorly it is united with the ſphænoid bone by gomphoſis, and with the ethmoid by harmony; inferiorly with the ſuperior maxillary and palatine bones by harmony; anteriorly it is united to the cartilaginous ſeptum of the noſe.

LOWER JAW-BONE.

Situation. In the inferior and anterior part of the face. **Figure**, like an horſeſhoe. **Processes.** Two *condyloid*, or *articulatory proceſſes*, which are received into the articulatory cavities of the temporal bones. Two *coronoid proceſſes*, which are ſharp pointed, and give adheſion to the temporal muſcles. The *alveolar proceſs*, in which the teeth are fixed. The *ſymphyſis* of the jaw, in the middle of the chin. The *inferior margin*, whoſe ends form the angles of the jaw. **Cavities.** A *ſemilunar notch*, between each coronoid and condyloid proceſs. Two *poſterior maxillary foramina*, one above each angle, on the inner ſurface of the jaw, which tranſmit the lower maxillary nerve and artery into a *canal* in the middle of the bone, called *canalis mentalis*, which conducts the ſame artery and nerve to the *anterior maxillary foramina*, upon the external ſurface of the bone, one on each ſide of the chin, from whence the artery and nerve gain emerge upon the chin. **Use.** To retain the oots of the teeth in the alveolar margin; to conſtiute the inferior ſegment of the cavity of the mouth, nd to afford a point of adheſion to the muſcles of he face, neck, larynx, and tongue. **Connexion.** The lower jaw is connected with the temporal ones by ginglymus, with the teeth by gomphoſis, nd with the os hyoides and other parts by ſyſſarcois. **Synonim.** *Mandibula.*

OF THE CAVITIES OF THE FACE IN PARTICULAR.

ORBITS.

Situated under the forehead, at the root of the noſe. **Figure**, conoid. The angles of the orbits are called *canthi*. **Cavities**. A *depreſſion* for the lachrymal gland; a *notch* of the orbital trochlea; a *depreſſion* for the lachrymal ſac; the *canalis naſalis* for the paſſage of the tears; a *ſuperior* and *inferior*, or *ſphæno-maxillary orbital fiſſure*. The *ſuperciliary foramen*; the *infra-orbital canal*; the *foramen naſale*, and the *optic foramen*. **Composed** of ſeven bones; the frontal, maxillary, jugal, lachrymal; ethmoid, palatine, and ſphænoid. **Use**, to contain and defend the organ of ſight and its adjacent parts.

CAVITY OF THE NOSTRILS.

Situated under the anterior part of the cranium, in the middle of the face. **Figure**, pyramidal. **Prominences**. The *ſeptum narium*; the *cavernous ſubſtance* of the ethmoid bone, improperly called the ſuperior ſpongy bones; and the *inferior ſpongy bones*. **Cavities**. Three pair of *pituitary ſinuſes*, namely, the frontal, ſphænoid, and maxillary; the *caverns* of the ethmoid labyrinth; the *anterior foramina* of the noſtrils; the *ductus naſalis*; the *ſphæno-palatine foramina*, and the *anterior*

terior palatine foramina. **Composed** of 14 bones, viz. the frontal; two maxillary; two naſal; two lachrymal; two inferior ſpongy; the ſphænoid, vomer, ethmoid, and two palatine bones. **Use**, to form the organ of ſmelling and the pituitary ſinuſes of the noſtrils, and to ſerve alſo for ſpeech and reſpiration.

CAVITY OF THE MOUTH.

Situated between the upper and under jaw. **Figure**, anteriorly ovate. **Divided** into upper and under jaw. **Composed** of five bones, viz. two ſuperior maxillary; two palatine; the lower jaw-bone, and 32 teeth. **Use**, for maſtication, ſpeech, and reſpiration.

TEETH.

Situated in the alveoli or ſockets of the jaws. **Number**, commonly 32, 16 in each jaw. **Divided** into four kinds, *inciſores*, or front teeth, four in each jaw; *cuſpidati*, one on each ſide of the inciſores; *bicuſpides*, two on the ſide of each cuſpidatus; and *molares*, or grinders. Each *tooth is divided* into a crown, neck, and root. The **substance** of the root and internal part of the crown is compact; the external ſurface is very hard, of a ſhining white colour, and is called the *enamel*. **Use**, for maſtication, and pronunciation of dental ſyllables. The teeth are **connected** with the jaws by gomphoſis.

CAVITY OF THE FAUCES.

Situated under the baſis of the cranium, within the ſuperior bodies of the vertebræ and poſterior part of the noſtrils. **Figure**, ſuperiorly quadrate. **Composed** of 10 bones, viz. the occipital; two palatine; the vomer; the bodies of the three firſt vertebræ; the os hyoides, and the two temporal bones. **Use**, for the ſituation of the fauces, larynx, pharynx, and os hyoides.

OS HYOIDES.

Situated in the fauces, between the baſis of the tongue and larynx. **Figure**, ſemilunar. **Prominences**, two *cornua majora*, and two *cornua minora*. **Use**, to ſerve for the adheſion of the tongue; for deglutition; and for a point of adheſion to many muſcles. **Synonim.** Os linguale. **Connexion.** It is connected with the ſtyloid proceſs of the temporal bone, the ſcapulæ, lower jaw, and ſternum, by various muſcles, and with the larynx by ligament.

CAVITY OF HEARING.

Situated internally in the petrous portion of each temporal bone. **Division**, into meatus auditorius externus; cavity of the tympanum; labyrinth; and meatus auditorius internus. In the *cavity of the tympanum* are, the orifice of the Euſtachian tube; the maſtoid ſinuoſity; the feneſtra ovalis;

lis; the feneſtra rotunda, and the oſſicula auditus. The *labyrinth* conſiſts of the cochlea, veſtibulum and ſemicircular canals. The *cochlea* has a baſis, apex, modiolus, ſcala veſtibuli, ſcala tympani, and a ſpiral lamina. The *veſtibulum* has a foramen ovale, and the orifices of the ſemicircular canals. Use. The cavity of hearing is the organ in which hearing is performed.

OSSICULA AUDITUS.

Situated in the cavity of the tympanum. Number 4, viz. malleus; incus; ſtapes, and os orbiculare. Substance, compact. Use, for hearing.

OF THE TRUNK.

8. Lect

The trunk of the ſkeleton is divided into the ſpine, cheſt, loins, and pelvis.

SPINE.

A long column, or pillar, which extends in the poſterior part of the trunk from the occipital bone to the os ſacrum. Composed of 24 bones, called *vertebræ*, viz. 7 of the neck, 12 of the back, and 5 of the loins. Each vertebra is divided into a *body*, and 7 *proceſſes*, viz. the ſpinous, 2 ſuperior oblique, 2 inferior oblique, and 4 tranſverſe proceſſes. Cavities. The *ſpinal canal*, called *ſpecus*, or *theca vertebralis;* and the *lateral foramina* of the vertebræ. Connexion. The firſt bone of the ſpine is connected with the occipital bone by ginglymus.

glymus. The ſecond vertebra is united with the firſt by trochoides, and with the occipital bone by ſyndeſmoſis. The bodies of the vertebræ are connected with one another by a peculiar intervertebral ſubſtance; and poſteriorly by a yellow elaſtic ligament and by their oblique proceſſes. USE, to ſupport the head and trunk, and to contain and defend the ſpinal marrow. SYNONIMS. Spina dorſi, columna ſpinalis, columna vertebralis.

CERVICAL VERTEBRÆ.

The firſt vertebra is called atlas. PECULIARITIES. No body nor ſpinous proceſſes, but forms an *arch*, which anteriorly ſurrounds the dentiform proceſs of the ſecond vertebra. Inſtead of upper oblique proceſſes, there are two *articular ſinuſes*. The ſecond vertebra is termed epiſtrophæus, or dentatus. PECULIARITIES. An *odontoid* or *dentiform proceſs* at the upper part of the body. All the tranſverſe proceſſes of the remaining cervical vertebræ have a peculiar *foramen* for the paſſage of the vertebral arteries.

DORSAL VERTEBRÆ.

PECULIARITIES. At the ſides of the bodies is a *depreſſion*, and a ſuperficial one in the points of the tranſverſe proceſſes, for the attachment of the great and little heads of the ribs.

LUMBAR VERTEBRÆ.

Peculiarities. They are much larger than the dorſal, and the tranſverſe proceſſes have no depreſſions.

OF THE CHEST, OR THORAX.

The thorax is compoſed of the 12 dorſal vertebræ, 24 ribs, and the ſternum.

RIBS.

Situated obliquely from the dorſal vertebræ to the ſternum. **Figure**, ſemicircular. **Number** 24, twelve on each ſide. **Division**, into 7 true, which are uppermoſt, and 5 ſpurious. **Eminences.** The *great head*, which is connected to the bodies of the dorſal vertebræ; the *neck*; the *leſſer head*, which is joined to the tranſverſe proceſſes of the dorſal vertebræ; and the *angle* of the rib. **Cavities**, a longitudinal *groove*, for the intercoſtal artery. **Substance**, anterior part *cartilaginous*, reſt *bony* and compact. **Connexion.** Anteriorly with the ſternum, and poſteriorly with the bodies and tranſverſe proceſſes of the dorſal vertebræ. **Use**, to form the thorax; to ſerve for reſpiration; to defend the vital viſcera, and to give adheſion to muſcles.

STERNUM.

Situated in the anterior part of the thorax, between the true ribs. **Figure**, ſomewhat like a dagger. **Cavities**, the *jugular ſinus*, at the ſuperior and inner part; two *clavicular ſinuſes*, for the attachment of the clavicles; and 7 *coſtal depreſſions*, to which the ribs adhere. **Substance**, ſomewhat ſpongy. **Use**, to form the thorax, and give adheſion to the mediaſtinum. **Connexion.** The ſternum is connected by arthrodia with the clavicle, and with the ſeven true ribs by ſynchondroſis.

OF THE LOINS.

The bones of the loins are five lumbar vertebræ.

OF THE CAVITY OF THE PELVIS.

Situated in the lower region of the trunk. **Figure**, ſomewhat like a barber's baſon. **Composed** of 4 bones, viz. two oſſa innominata, the os ſacrum, and os coccygis. **Use**, to contain the organs of generation; the bladder; inteſtinum rectum; and to ſupport the ſpine.

OSSA INNOMINATA.

Situated at the ſides of the pelvis. **Figure**, irregular. **Division**, each bone into three portions, viz. ilium the uppermoſt, iſchium the loweſt, and pubis the anterior. **Eminences.** The *criſta* of the ilium, from which the oblique and tranſverſe muſcles of the abdomen ariſe—at its poſterior part are two *ſpinous proceſſes*, which give adheſion to ligaments—at its anterior part are alſo two *ſpinous proceſſes*, the *ſuperior* gives adheſion to the ſartorius, tenſor vaginæ femoris, and the ligament of the thigh; the *inferior anterior ſpinous proceſs*, about an inch from the former has ariſing from it the rectus femoris. The *external ſurface* of the iliac portion is covered by the glutæi muſcles; the *internal* by the internal iliac. Upon the internal ſurface there is a *line* even with the pubis; this is called *linea innominata*, or rim of the pelvis; it divides the cavity of the abdomen from the pelvis. Upon the iſchiatic portion or iſchium are, the *tuberoſity* of the iſchium, upon which we ſit; the *ſpinous proceſs* of the iſchium, which projects backwards, and gives adheſion to the uppermoſt ſacro-ſciatic ligament; the *ramus iſchii*, which joins the pubis. Upon the pubic portion, or pubis, are, the *body*, near the ſocket; the *angles* and *arches* of the pubis. CAVITIES, a *notch* between the anterior ſpines of the ilium; an *anterior* and *poſterior iſchiatic notch*; the *acetabulum*, which receives the head of the os femoris, and the *foramen thyroideum*, or *ovale*. Each os innominatum is CONNECTED with its fellow anteriorly by ſymphyſis, with the ſacrum poſterio[illegible] by ſtrong cartilages and ligaments, and with the head of the thigh bone by enarthroſis. USE, to form the pelvis; to retain the gravid uterus in its ſituation, and to conſtitute the acetabulum for the thighs.

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OS SACRUM.

Situated at the poſterior part of the pelvis. **Figure**, triangular, bent forwards. **Eminences**, two *ſuperior oblique proceſſes; appearances* of the ſpinous proceſſes; *appearances* of the oblique and tranſverſe proceſſes, and the *appearances* of the vertebral bodies. **Cavities**, four pair of *external*, and four pair of *internal foramina*, and five *longitudinal middle canals*. **Use**, to conſtitute the pelvis, and ſuſtain the ſpine. **Connexion.** Superiorly with the laſt lumbar vertebræ, laterally with the oſſa innominata, and inferiorly with the os coccygis.

OS COCCYGIS.

Situated at the apex of the ſacrum. **Figure**, irregular. **Use**, to ſuſtain the rectum, and prevent the rupture of the perinæum in parturition. It is **connected** to the apex of the ſacrum.

OF THE SUPERIOR EXTREMITIES.

The bones of the upper extremities are, on each ſide, the clavicle, ſcapula, humerus, radius, ulna, bones of the carpus, metacarpus, and fingers.

CLAVICLE.

Situated obliquely in the upper and lateral parts of the thorax. **Figure**, like the letter *ſ*. **Cavities**, a furrow, or *groove*, of the ſubclavian veſſels on the inferior ſurface. **Use**, to connect the ſcapula and humerus to the thorax, and to defend the ſubclavian veſſels. CONNEXION. Anteriorly it is articulated to the ſternum, and poſteriorly to the ſcapula, by arthrodia.

SCAPULA.

SITUATED in the upper and lateral part of the back. FIGURE, triangular. EMINENCES. The *ſpine*, which is in the middle of the external ſurface. Its anterior termination is called the *acromion.* The *coracoid proceſs* which ſtands out oppoſite to the acromion. The borders of the bone are called *coſtæ*, and the corners *angles.* The circle below the articular cavity is called the *neck.* CAVITIES. The *articular* or *glenoid* cavity, which receives the head of the humerus. The ſcapula is UNITED with the clavicle by arthrodia, with ribs and os hyoides by muſcle, and with the humerus by arthrodia. USE, to defend the back, and give articulation to the humerus. SYNONIM. Omoplata.

OS HUMERI, OR OS BRACHII.

SITUATED between the ſcapula and fore-arm. FIGURE, long. EMINENCES, the *head*, which is rounded on its ſuperior part; the *neck*, which is immediately below the head; the *greater tubercle*, near the neck, which receives the ſupra ſpinatus muſcles; and the *leſſer tubercle*, which is near the former, and has fixed to it the ſubſcapularis. *On the inferior extremity* are three *condyles*, namely,

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an *external* and an *internal* condyle, which give origin to the flexor and extenſor muſcles of the arm; and the trochlea of the humerus. CAVITIES, a furrow between the tubercles, for the long tendon of the biceps. *In the inferior extremity*, a *poſterior foſſa*, for the anconoid proceſs of the ulna, and an *anterior depreſſion*, for the coronoid proceſs. USE, to conſtitute the arm. CONNEXION. The humerus is connected with 3 bones; with the ſcapula by arthrodia, and the cubit and radius by ginglymus.

CUBIT, OR ULNA.

SITUATED in the inſide of the fore-arm, towards the little finger. FIGURE, long, and thicker above than below. EMINENCES, the *olecranon*, or *anconoid proceſs*, upon which we lean, and the *coronoid proceſs* which is oppoſite to it. In the lower extremity are the *lower head*, the *neck*, and the *ſtyloid proceſs*, which gives a ſtrong adheſion to the ligament which ſecures the wriſt. CAVITIES, the ſigmoid cavity, at the upper end. USE, to conſtitute the chief ſupport of the fore-arm. CONNEXION. Superiorly with the trochlea of the humerus by arthrodia, inferiorly with the carpus by arthrodia, and with the radius by trochoides, as in pronation and ſupination.

RADIUS.

SITUATED in the external ſide of the fore-arm, towards the thumb. FIGURE, long. EMI-

NENCES, upper head, which is excavated; the *little head*, and the *ſtyloid* proceſs at the inferior extremity. CAVITY, the *glenoid cavity*. USE, to aſſiſt in forming the fore-arm, and to ſerve for flexion, ſupination, and pronation. The radius is CONNECTED to the humerus by ginglymus, to the cubit by an interoſſeous ligament and trochoides; and to the carpus by arthrodia.

CARPUS, OR WRIST.

COMPOSED of 8 bones, which lie cloſe to each other, in a double row. SITUATED between the fore-arm and metacarpus. DIVISION, into two rows, ſuperior and inferior. *In the ſuperior row* are (from the thumb to the little finger), os ſcaphoides, or naviculare; os lunare; os cuneiforme; and os orbiculare, or ſub-rotundum. *In the lower row*, os trapezium, os trapezoides, os magnum, and os unciforme.

METACARPUS.

SITUATED between the carpus and fingers. COMPOSED of 5 longitudinal bones; one of the thumb, and four metacarpal bones of the fingers. USE, to form the middle part of the hand.

FINGERS.

SITUATED at the inferior extremity of the metacarpus. COMPOSED of a thumb and four fingers. The thumb has two bones, and each finger three, which are called phalanges. USE, to form the fingers, which are the inſtruments of touch, defence, and labour.

OF THE INFERIOR EXTREMITIES.

The bones of the inferior extremity are, the femur, patella, tibia, fibula, the bones of the tarſus, metatarſus, and toes.

FEMUR.

Situated between the pelvis and tibia. Figure, long. Eminences, the *head*, which is received into the acetabulum of the os innominatum, and has a ſmall *dimple* in its middle, for the attachment of the round or reſtraining ligament; the *neck*, upon which the head ſtands, it is rough, and gives attachment to the capſular ligament; the *great trochanter*, which is a large eminence below the neck, for the inſertion of the glutæi muſcles; the *little trochanter*, which receives the pſoas and iliacus internus; and a rough line on the body of the bone, called linea aſpera. On the inferior extremity are the *external* and *internal condyle*, and between them poſteriorly a deep *notch*, for the paſſage of the great artery, vein, and nerve of the leg. Use, to form part of the lower extremity. The femur is connected to the acetabulum of the os innominatum by enarthroſis, and to the tibia and patella by ginglymus. Substance. Compact on its outſide; ſpongy in the extremities; and cancellated internally.

TIBIA.

TIBIA.

Situated in the inſide of the leg, between the femur and tarſus. Figure, longitudinal. Eminences, the *upper head* of the tibia; the *ſpine* of the tibia, to which the great ligament of the patella is fixed; and the *lower head* of the tibia, which forms the outer ankle. Cavities, two *articular ſinuſes*, in the upper head, for the reception of the condyles of the femur; and the *articular cavity* at the ſide of the head for the reception of the fibula. Use, to ſupport the leg, and ſerve for the flexion of the lower extremity. The tibia is connected to the femur and patella by ginglymus, to the fibula by ſyneuroſis, and to the aſtragalus by arthrodia.

FIBULA.

Situated in the outer part of the leg, by the ſide of the tibia. Figure, longitudinal. Eminences, the *head* of the fibula, at the upper part, and the *malleolus externus*, or outer ankle, at the lower end. Connexion. It is connected to the tibia by an interoſſeous ligament, and to the aſtragalus by arthrodia. Use, to form a fulcrum for the tibia, and aſſiſt in forming the leg.

PATELLA, ROTULA, OR KNEE-PAN.

Situated in the ſinus between the condyles of the femur, and above the tibia. Figure, ſomewhat reſembles an heart. The patella is con-

NECTED to the condyles of the femur by ginglymus, and with the tibia by ſyneurosis. USE, to ſtrengthen the knee-joint, and to ſerve as a common pulley for the extenſor muſcles of the tibia.

TARSUS.

SITUATED between the leg and metatarſus. FIGURE, in the ſuperior part, headed, and broad below. COMPOSED of ſeven bones, placed in a double row: *in the firſt row* are the aſtragalus and os calcis; *in the ſecond row*, the os naviculare; os cubiforme; and three cuneiform bones, which are placed cloſe to each other. EMINENCES, head of the aſtragalus, and the tuberoſity of the heel. USE, to form the baſis of the foot, and to ſerve for its motion. The CONNEXION of the bones of the tarſus is with the tibia and fibula by arthrodia, and with the metatarſal bones, and alſo with one another, by amphiarthroſis.

METATARSUS.

SITUATED between the tarſus and toes. COMPOSED of five longitudinal bones. USE, to form the back and ſole of the foot.

TOES.

COMPOSITION. The great toe is compoſed of two ſmall bones; each toe, of three ſmall bones, called phalanges.

SESAMOID BONES.

SITUATED in the joints, under the phalanges of the thumb and of the great toe.

PERIOS-

PERIOSTEUM.

Definition. A membrane which inveſts the external and internal ſurface of all the bones except the crowns of the teeth. **Names.** *Pericranium* on the cranium; *periorbita* on the orbits; *perichondrium*, when it covers cartilages; and *perideſmium*, when it covers ligaments. **Substance**, fibrous, furniſhed with arteries, veins, nerves, and abſorbent veſſels. **Use**, to diſtribute the veſſels on the external and internal ſurfaces of bones.

CARTILAGES.

Definition. White, elaſtic, gliſtening ſubſtances, growing to the bones. **Division**, into *obducent*, which cover the articulatory ſurfaces of bones; *inter-articular*, which are not accreted to the bones, but adhere to the capſular ligament, and lie between the articulating extremities, as in the knee-joint, &c.; and *uniting* cartilages, which unite bones firmly together, as the ſymphyſis pubis, bodies of the vertebræ, &c. **Use**, to lubricate the articulation of the cartilages; to connect ſome bones by an immoveable connexion; and to facilitate the motion of ſome articulations.

OSTEOGENY,

OR

DOCTRINE OF THE FORMATION AND GROWTH OF BONES.

Ossification is a ſpecific action of ſmall arteries, by which oſſific matter is ſeparated from the blood, and depoſited where it is required.

The firſt thing obſervable in the embryo, where bone is to be formed, is a tranſparent *jelly*, which becomes gradually firmer, and is formed into *cartilage*. The cartilage gradually increaſes to a certain ſize, and when the proceſs of oſſification commences, vaniſhes as it advances. Cartilages previous to the oſſific action are ſolid, and without any cavity; but when the oſſific action of the arteries is about to commence, the abſorbents become very active, and form a *ſmall cavity* in which the bony matter is depoſited; bone continues to be ſeparated, and the abſorbents model the maſs into its required ſhape.

The proceſs of oſſification is extremely rapid in utero: it advances ſlowly after birth, and is not completed in the human body till about the twentieth year.

Oſſification in the flat bones, as thoſe of the ſkull, always begins from *central points*, and the radiated fibres meet the radii of other oſſifying points or the edges of the adjoining bone.

In long bones, as thoſe of the arm and leg, the clavicle, metacarpal and metatarſal bones, a *central ring* is formed in the body of the bone, the head and extremities being cartilage, in the centre of which oſſification afterwards begins. The central ring of the body ſhoots its bony fibres towards the head and extremities, which extend towards the body of the bone. The head and extremities at length come ſo cloſe to the body as to be merely ſeparated by a cartilage, which becomes gradually thinner until the twentieth year.

Thick and round bones, as thoſe of the tarſus, carpus, ſternum, and patella, are at firſt all cartilage; oſſification begins in the *centre* of each.

At birth the BONES OF THE FŒTUS are very imperfect. The extremities and proceſſes of almoſt all the long bones are connected to the body of the bone by cartilage. Theſe portions of bone are called EPIPHYSES. The cranium has no ſutures; its bones are connected together by a firm and almoſt cartilaginous membrane. On the anterior part of the cranium, between the parietal bones and the frontal, is a conſiderable membranous ſpace, called the ANTERIOR FONTANEL, and a ſimilar [illegible] ſmaller one between the parietal bones and [illegible]ital, termed the POSTERIOR FONTANEL.

The frontal bone conſiſts of two bones, and the occipital of four. The teeth are partly formed, eſpecially the enamel, and are placed in a double ſeries. The external auditory foramen is ſurrounded by a *bony circle*, in which there is a groove for the attachment of the membrana tympani. This circle gradually elongates into the meatus auditorius. The articular cavities of all the bones are much more ſhallow than in the adult. The os innominatum conſiſts of three bones, the ilium, iſchium, and pubis, which are connected together by very firm cartilage. The bodies of the vertebræ and its proceſſes are united by cartilages.

OF THE CONNEXION OF BONES.

Bones are connected with one another, ſo as to admit of motion, and this kind of union is termed *diarthroſis;* or ſo as to admit of no motion, which is termed *ſynarthroſis;* and when connected with one another by an intervening ſubſtance, the union is termed *ſymphyſis.* Diarthroſis, ſynarthroſis, and ſymphyſis, are to be conſidered as the genera only of articulations, each genus comprehending ſeveral ſpecies, which are arranged as follows,

GENERA.	SPECIES.
DIARTHROSIS, or *moveable Connexion.*	*Enarthroſis*, when the round head of one bone is received into the deep cavity of another, ſo as to admit of motion in every direction; as the head of the os femoris with the acetabulum of the os innominatum.
	Arthrodia, when the round head of a bone is received into a ſuperficial cavity of another, ſo as to admit of motion in every direction; as the head of the humerus with the glenoid cavity of the ſcapula.
	Ginglymus, when the motion is only flexion and extenſion; thus the tibia is articulated with the os femoris; and the cubit and radius with the os humeri.
	Trochoides, when one bone rotates upon another; as the firſt cervical vertebra upon the odontoid proceſs of the ſecond, and the radius upon the ulna, or cubit.
	Amphiarthroſis, when there is motion, but that very obſcure; as the motion of the metacarpal and metatarſal bones.
SYNARTHROSIS, or *immoveable Connexion.*	*Suture*, when the union is by means of dentiform margins; as in the bones of the cranium: hence the ſagittal, lambdoidal, or occipital and coronal ſutures.
	Harmony, when the connexion is by means of rough margins, not dentiform; as in the bones of the face.
	Gomphoſis, when one bone is fixed within another, like a nail in a board; as the teeth in the alveoli of the jaws.

GENERA.	SPECIES.
SYMPHYSIS, or *mediate Connexion.*	*Synchondroſis*, when a bone is united with another by means of an intervening cartilage; as the vertebræ and bones of the pubis. *Syſſarcoſis*, when a bone is connected with another by means of an intervening muſcle; as the os hyoides with the ſternum. *Syneuroſis*, when a bone is united to another by an intervening membrane; as the bones of the head of the fœtus. *Syndeſmoſis*, when a bone is connected to another by means of an intervening ligament; as the radius with the ulna, &c. *Synoſtoſis*, when two bones, originally ſeparated, are united to one another by bony matter.

SYNDESMOLOGY,

OR

DOCTRINE OF THE LIGAMENTS.

LIGAMENTS are elaſtic and ſtrong membranes connecting the extremities of the moveable bones. DIVISION, into *capſular*, which ſurround joints like a bag, and *connecting* ligaments. USE. The capſular ligaments connect the extremities of the moveable bones, and prevent the efflux of ſynovia; the external and internal connecting ligaments ſtrengthen the extremities of the moveable bones.

LIGAMENTS OF THE LOWER JAW. The condyles of the lower jaw are connected with the articular ſinuſes of the temporal bone by two ligaments, the capſular and lateral ligament.

LIGAMENTS OF THE OCCIPITAL BONE, AND VERTEBRÆ OF THE NECK. The condyles of the occipital bone are united with the articular depreſſions of the firſt vertebra by the capſular, broad, anterior, and poſterior ligaments, the ligaments of the odontoid proceſs, and ligamentum nuchæ.

LIGAMENTS OF THE VERTEBRÆ. The vertebræ are connected together by means of their bodies and oblique proceſſes. The bodies by a ſoft cartilaginous ſubſtance, and the proceſſes by ligaments, viz. the tranſverſe ligament of the firſt vertebra; the anterior and poſterior common; the interſpinous; the intertranſverſe; the intervertebral ligaments; the capſular ligaments of the oblique proceſſes; and the ligaments of the laſt vertebra of the loins with the os ſacrum.

LIGAMENTS OF THE RIBS. The poſterior extremity of the ribs is united with the vertebræ; the anterior with the ſternum. The ligaments of the poſterior extremity are, the capſular ligaments of the greater and leſſer heads; the internal and external ligaments of the neck of the ribs; and a ligament peculiar to the laſt rib. The ligaments of the anterior extremity are, the capſular ligaments of the cartilages of the true ribs, and the ligaments of the ribs *inter ſe*.

LIGAMENTS OF THE STERNUM. The ligaments connecting the three portions of the ſternum to the ribs are, the membrana propria of the ſternum; and the ligaments of the enſiform cartilage.

LIGAMENTS OF THE PELVIS. The ligaments which connect the oſſa innominata with the os ſacrum are, three ligamenta ileo-ſacra; two ſacro-iſchiatic ligaments; two tranſverſe ligaments of the pelvis; the ligamentum obturans of the foramen ovale, and the ligamentum Poupartii, or inguinale.

LIGAMENTS OF THE OS COCCYGIS. The baſis of the os coccygis is connected to the apex of the os ſacrum, by the capſular and longitudinal ligaments.

LIGAMENTS OF THE CLAVICLE. The anterior extremity is connected with the ſternum and firſt rib; and the poſterior extremity with the acromion of the ſcapula, by the interclavicular, the capſular ligament, the ligamentum rhomboideum, and in the poſterior extremity, the capſular ligament.

LIGAMENTS OF THE SCAPULA. The proper ligaments which connect the ſcapula with the poſterior extremity of the clavicle are, the conoid and trapezoid ligaments.

Ligaments of the humerus. The head of the humerus is connected with the glenoid cavity of the ſcapula by the capſular ligament.

Ligaments of the articulation of the cubit. The elbow joint is formed by the inferior extremity of the humerus, and ſuperior extremities of the ulna and radius. The ligaments connecting theſe bones are, the capſular, the brachio-cubital, and the brachio-radial ligaments.

Ligaments of the radius. The radius is affixed to the humerus, cubit, and carpus, by peculiar ligaments, namely, the ſuperior, inferior, oblique, and interoſſeous ligaments.

Ligaments of the carpus. The ligaments which connect the eight bones of the wriſt together, and with the fore-arm and metacarpus, are, the capſular ligament of the carpus; the firſt and ſecond tranſverſe ligament; the oblique ligament; and the capſular ligament proper to the bones of the carpus.

Ligaments of the metacarpus. The bones of the metacarpus are in part connected with the ſecond row of bones of the carpus, and in part together, by the articular and interoſſeous ligaments.

Ligaments of the fingers. The fingers and phalanges are connected together, and with the metacarpus; and the thumb with the carpus, by the lateral ligaments of the fingers, and ligament of the thumb with the os trapezium of the carpus.

Ligaments which keep the tendons of the muscles of the hand in their proper place. The ligaments which keep the tendons of the muſcles of the hand in their place, are ſituated partly in the palm, and partly on the back of the hand. In the back of the hand are, the external tranſverſe ligament of the carpus, the vaginal, and the tranſverſe ligaments of the extenſor tendons. In the palm of the hand are, the internal tranſverſe ligament of the carpus, the vaginal or crucial ligaments of the flexor tendons of the phalanges, and the acceſſory ligaments of the flexor tendons.

Ligaments of the articulation of the femur. The head of the os femoris is ſtrongly annexed to the acetabulum of the os innominatum, by two very ſtrong ligaments, the capſular ligament, and ligamentum teres, or reſtraining ligament.

Ligaments of the articulation of the knee. The knee joint is formed by the condyles of the os femoris, head of the tibia and the patella. The ligaments are the capſular, the poſterior, the external and the internal lateral ligaments, the crucial and the alar ligaments, the ligaments of the ſemilunar cartilages, and ligaments of the patella.

Ligaments of the fibula. The fibula is connected with the tibia by means of the capſular ligament of the ſuperior extremity, the interoſſeous ligament, and the ligaments of the inferior extremity.

Ligaments of the articulation of the tarsus. The inferior extremity of the tibia and fibula forms the cavity into which the aſtragalus of the tarſus is received. This articulation is effected by the anterior, middle, and poſterior ligament of the fibula, the ligamentum tibiæ deltoides, the capſular ligament, and the ligaments proper to the bones of the tarſus.

Ligaments of the metatarsus. The bones of the metatarſus are connected in part together, and in part with the tarſus, by means of the capſular ligament, the articular ligaments, the tranſverſe ligaments in the back and ſole of the foot, and the interoſſeous ligaments of the metatarſus.

Ligaments of the toes. The phalanges of the toes are united partly together, and partly with the metatarſus, by the capſular and lateral ligaments.

Ligaments which retain the tendons of the muscles of the foot in their proper place. Theſe ligaments are found partly in the back and partly in the ſole of the foot. They are the vaginal ligament of the tibia, the tranſverſe or crucial ligaments of the tarſus, the ligaments of the tendons of the peronei muſcles, the laciniated ligament, the vaginal ligament of the extenſor muſcle and flexor pollicis, the vaginal ligaments of the flexor tendons, the acceſſory ligaments of the flexor tendons, and the tranſverſe ligaments of the extenſor tendons.

MYOLOGY,

OR

DOCTRINE OF THE MUSCLES.

A MUSCLE is a fibrous body. DIVISION, into head, belly, and tail. ADHESION, the head and tail are firmly attached to the bones; the place of attachment of the former is called its *origin;* it is uſually that part neareſt the trunk of the body: the latter is termed the *inſertion*, which is more remote from the trunk of the body, and is implanted into the part to be moved. The body adheres laxly to other parts, by means of the cellular membrane, in order that it may ſwell when the muſcle acts. SUBSTANCE, fleſhy in the belly, tendinous in the extremities. The former is compoſed of fleſhy fibres, which are irritable and ſenſible; the latter of white fibres, which are neither ſenſible nor irritable. When the tendinous extremity of a muſcle is rounded, it is called a *tendon;* when broad and expanded, *aponeuroſis*, and ſometimes *faſcia.* Muſcles are variouſly NAMED, according to the arrangement of their fibres, or from their action; or from their origin and inſertion; or from their figure or ſituation: thus when the fibres go in the ſame direction, it is ſaid to be a *ſimple* muſcle; when they are in rays, a *radiated* muſcle; when arranged like the plume of a feather, a *penniform* muſcle; and when two penniform muſcles are contiguous, a *compound penniform.* Muſcles ſometimes ſurround certain cavities of the body, forming a thin lamina, as in the inteſtinal canal, bladder, &c. When they are ſituated around any opening, ſo as to ſhut or open it, they are termed *ſphincters.* There are many muſcles named from their action, as the flexors, extenſors, depreſſors, levators, corrugatores ſupercilii, &c. The muſcles which receive names from their origin and inſertion are very numerous; as the ſterno-cleido-maſtoideus, ſtylo-hyoideus, ſtylo-gloſſus, &c. The deltoid, pectineus, pyramidalis, &c. are named from their figure, and the pectoralis, lingualis, temporalis, pterygoideus, &c. from their ſituation. Muſcles that concur in producing the ſame action, are called *congeneres;* but thoſe that act contrary to each other, *antagoniſtæ.* **Vessels.** Arteries, veins, and abſorbents, abound in the fleſhy part; but very few indeed in the tendinous. **Nerves** of muſcles are alſo numerous in the fleſhy parts, and wanting in the tendinous. **Use.** Muſcles are the organs of motion.

MUSCLES OF THE INTEGUMENTS OF THE CRANIUM.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Occipito-frontalis *.	The upper ridge of the occipital bone; its aponeuroſis covers the upper part of the head.	The ſkin of the eyebrows and root of the noſe.	To pull the ſkin of the head backwards—raiſe the eyebrows and ſkin of the forehead.
Corrugator ſupercilii †.	Above the root of the noſe.	The inner part of the occipito-frontalis.	To wrinkle the eyebrows.

MUSCLES OF THE EYELIDS.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Orbicularis palpebrarum.	Around the edge of the orbit.	The inner corner of the eyes.	To ſhut the eye.
Levator palpebræ ſuperioris.	The bottom of the orbit, near the optic foramen.	The cartilage of the tarſus of the upper eyelid.	To open the eye, by raiſing the upper eyelid.

† The reader will be pleaſed to obſerve, that although all the muſcles (a few only excepted, which are marked thus*) are in pairs, mention is made here only of the muſcles of one ſide.

MUSCLES OF THE EYEBALL.

Rectus ſuperior.	Around the optic foramen of the ſphænoid bone, at the bottom of the orbit.	The anterior part of the tunica ſclerotica, oppoſite to each other.	To raiſe it upwards.
Rectus inferior.			To pull it downwards.
Rectus internus.			To turn it to the noſe.
Rectus externus.			To move it outwards.
Obliquus ſuperior ſeu *Trochlearis.*	Near the optic foramen, and paſſes thro' a trochlea in the internal canthus of the eye, and is reflected to be	The poſterior part of the bulb, between the rectus and the entrance of the optic nerve.	To roll the eye, and turn the pupil downwards and outwards.
Obliquus inferior.	The ductus naſalis, and is inſerted	Oppoſite to the former.	To roll the eye.

MUSCLES OF THE NOSE AND MOUTH.

Levator labii ſuperioris alæque naſi.	The naſal proceſs of the ſuperior maxillary bone.	The upper lip and ala of the noſe.	It raiſes the upper lip, and dilates the noſtrils.
Levator labii ſuperioris proprius.	The upper jaw, under the orbit.	The middle of the upper lip.	To pull the upper lip directly upwards.

Levator

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Levator anguli oris.	The orbitar foramen of the ſup. max. bone.	The orbicularis, at the angle of the mouth.	To raiſe the corner of the mouth.
Zygomaticus major.	The os jugale, near the zygomatic ſuture, and runs downwards.	The angle of the mouth, with the depreſſor of the lip.	To inflate the cheek and raiſe the angle of the mouth.
Zygomaticus minor.	Above the zygomaticus major.	The angle of the mouth.	To raiſe the angle of the mouth outwards.
Buccinator.	The ſockets of the laſt molares, and the coronoid proceſs of the lower jaw.	The angle of the mouth, and is perforated by the duct of the parotid gland.	To contract the mouth, and draw the angle of it outwards and backwards.
Depreſſor anguli oris.	The lower edge of the under jaw, near the chin.	The angle of the mouth.	To draw the corner of the mouth downwards.
Depreſſor labii inferioris.	The inferior part of the lower jaw, next the chin.	The middle of the under lip.	To draw the under lip downwards and outwards.

Orbicularis oris *.	This muſcle ſurrounds the lips, and is in a great meaſure formed by the buccinator, zygomatici, and others, which move the lip.		To ſhut the mouth, by contracting the lips.
Depreſſor labii ſuperioris alæque naſi.	The ſockets of the upper inciſor teeth.	The root of the ala naſi and upper lip.	To pull the ala naſi and upper lip down.
Conſtrictor naſi.	The root of one wing of the noſe, and	goes acroſs to the other.	To compreſs the wings of the noſe.
Levator menti vel labii inferioris.	The lower jaw, at the root of the inciſors.	The ſkin in the centre of the chin.	To raiſe the under lip and ſkin of the chin.

MUSCLES OF THE EXTERNAL EAR.

Superior auris, or *attollens aurem.*	The tendon of the occipito-frontalis, above the ear.	The root of the cartilaginous tube of the ear.	To draw the ear upwards, and make it tenſe.
Anterior auris.	Near the back part of the zygoma.	The eminence behind the helix.	To raiſe this eminence forwards.
Poſterior auris, or *retrahens auris.*	The maſtoid proceſs, by two and ſometimes three faſciculi.	The ſeptum that divides the ſcapha and concha.	To draw the ear back, and ſtretch the concha.

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Helicis

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Helicis major.	The upper, anterior, and acute part of the helix.	The cartilage of the helix, a little above the tragus.	To depreſs the upper part of the helix.
Helicis minor.	The inferior and anterior part of the helix.	The crus of the helix.	To contract the fiſſure.
Tragicus.	The outer and middle part of the concha, near the tragus.	The upper part of the tragus.	To depreſs the concha, and pull the tragus a little outwards.
Antitragus.	From the root of the inner part of the helix.	The upper part of the antitragus.	To dilate the mouth of the concha.
Tranſverſus auris.	The upper part of the concha.	The inner part of the helix.	To draw theſe parts towards each other.

MUSCLES OF THE INTERNAL EAR.

Laxator tympani.	The ſpinous proceſs of the ſphænoid bone.	The long proceſs of the malleus.	To draw the malleus obliquely forwards, towards its origin.

Tenſor tympani.	The [illegible]laginous extremity of the Euſtachian tube.	The handle of the malleus.	To pull the malleus and membrane of the tympanum towards the petrous portion.
Stapedius.	A little cavern in the petrous portion, near the cells of the maſtoid proceſs.	The poſterior part of the head of the ſtapes.	To draw the ſtapes obliquely upwards towards the cavern.

MUSCLES OF THE LOWER JAW.

Temporalis.	The lower part of the parietal bone and os frontis; ſquammous part of the temporal bone; back part of the os jugale; the temporal proceſs of the ſphænoid bone, and the aponeuroſis which covers it.	The coronoid proceſs of the lower jaw, its fibres being bundled together and preſſed into a ſmall compaſs, ſo as to paſs under the jugum, or zygoma.	To move the lower jaw upwards.
			Maſſeter.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Maſſeter.	The ſup. max. bone, near the os jugale; and from the anterior part of the zygoma.	The angle of the lower jaw upwards to the baſis of the coronoid proceſs.	To raiſe and move the jaw a little forwards and backwards.
Pterygoideus internus.	The internal pterygoid proceſs of the ſphænoid bone.	The lower jaw, on its inner ſide, and near its angle.	To raiſe the lower jaw, and draw it a little to one ſide.
Pterygoideus externus.	The external pterygoid proceſs.	The condyloid proceſs of the lower jaw and capſular ligament.	To move the jaw, and to prevent the ligament of the jaw from being pinched.

MUSCLES WHICH APPEAR ABOUT THE ANTERIOR PART OF THE NECK.

Platyſma myoides.	The cellular membrane covering the pectoral and deltoid muſcles.	The ſide of the chin and integuments of the cheek.	To draw the cheeks and ſkin of the face downwards.
Sterno-cleido-maſtoideus.	The upper part of the ſternum, and fore part of the clavicle.	The maſtoid proceſs, and as far back as the occipital ſuture.	To move the head to one ſide, and bend it forwards.

MUSCLES SITUATED BETWEEN THE LOWER JAW AND OS HYOIDES.

MUSCLES SITUATED BETWEEN THE LOWER JAW AND OS HYOIDES.

Digaſtricus.	A foſſa at the root of the maſtoid proceſs.	The lower and anterior part of the chin.	To draw the lower jaw downwards.
Mylo-hyoideus.	The inner ſurface of the jaw-bone.	The baſis of the os hyoides.	To move the os hyoides upwards.
Genio-hyoideus.	The inſide of the chin.	The baſis of the os hyoides.	To move the os hyoides upwards.
Genio-gloſſus.	The inſide of the chin.	The tongue, forming part of its ſubſtance.	To move the tongue in various directions.
Hyo-gloſſus.	The horn, baſis, and cartilage of the os hyoides.	Into the tongue laterally.	To draw the tongue downwards and inwards.
Lingualis.	The root of the tongue laterally.	The extremity of the tongue.	To ſhorten and draw the tongue backwards.

MUSCLES SITUATED BETWEEN THE OS HYOIDES AND TRUNK.

Sterno-hyoideus.	The ſternum and clavicle.	The baſis of the os hyoides.	To draw the os hyoides downwards.

Omo-

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Omo-hyoideus.	Near the coracoid proceſs of the ſcapula.	The baſis of the os hyoides.	To draw the os hyoides downwards.
Sterno-thyroideus.	The upper and inner part of the ſternum.	The thyroid cartilage.	To pull the thyroid cartilage downwards.
Thyreo-hyoideus, or *Hyo-thyroideus.*	Part of the baſis and horn of the os hyoides.	The ſide of the thyroid cartilage.	To raiſe the cartilage, and depreſs the bone.
Crico-thyroideus.	The ſide of the cricoid cartilage.	The inferior horn of the thyroid cartilage.	To pull the thyroid cartilage towards the cricoid.

MUSCLES SITUATED BETWEEN THE LOWER JAW AND OS HYOIDES, LATERALLY.

Stylo-gloſſus.	The apex of the ſtyloid proceſs.	The ſide of the root of the tongue.	To pull the tongue backwards.
Stylo-hyoideus.	The baſis, and about the middle of the ſtyloid proceſs.	The baſis of the os hyoides.	To draw the os hyoides upwards.

Stylo-pharyngeus.	The root of the ſtyloid proceſs.	The edge of the pharynx, and back of the thyroid cartilage.	To dilate the pharynx, and raiſe the cartilage.
Circumflexus, ſeu *Tenſor palati.*	Near the Euſtachian tube, and paſſes through the hamulus of the pterygoid proceſs, to be	The velum pendulum palati.	To draw the velum pendulum palati obliquely downwards, and ſtretch it.
Levator palati mollis.	The point of the os petroſum, the Euſtachian tube, and ſphænoid bone.	The velum pendulum palati, being expanded upon it.	To pull the velum pendulum backwards and upwards.

MUSCLES SITUATED ABOUT THE ENTRY OF THE FAUCES.

Conſtrictor iſthmi faucium.	Near the root of the tongue, on each ſide, and goes round, to be	The middle of the velum pendulum palati, near the uvula.	To raiſe the tongue, and draw the velum towards it.

Palato-

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Palato-pharyngeus.	The middle of the ſoft palate, goes round the entry of the fauces, the tendon of the circumflexus palati, and velum pendulum palati, to be	The upper and poſterior part of the thyroid cartilage.	To contract the arch of the fauces.
Azygos uvulæ.*	The commiſſure of the oſſa palati.	The extremity of the uvula.	To ſhorten and raiſe the uvula.

MUSCLES SITUATED ON THE POSTERIOR PART OF THE PHARYNX.

Conſtrictor pharyngis inferior.	The cricoid and thyroid cartilages.	The middle of the pharynx.	To compreſs part of the pharynx.
Conſtrictor pharyngis medius.	The horns, and appendix of the os hyoides.	The ambit of the pharynx.	To compreſs the pharynx, and draw the os hyoides upwards.

Conſtrictor pharyngis ſuperior.	The pterygoid proceſs, the lower jaw, and the cuneiform proceſs of the os occipitis.	The middle of the pharynx.	To move the pharynx upwards and forwards, and to compreſs its upper part.

MUSCLES SITUATED ABOUT THE GLOTTIS.

Crico-arytænoideus poſticus.	The cricoid cartilage poſteriorly.	The back of the arytænoid cartilage.	To open the glottis.
Crico-arytænoideus lateralis, or *obliquus.*	The ſide of the cricoid cartilage.	The ſide of the arytænoid cartilage.	To open the glottis.
Thyreo-arytænoideus.	The back of the thyroid cartilage.	The fore part of the arytænoid cartilage.	To draw the arytænoid cartilage forward.
Arytænoideus obliquus.*	The root of one arytænoid cartilage.	The extremity of the other.	To draw them towards each other.
Arytænoideus tranſverſus.*	One of the arytænoid cartilages.	The other arytænoid cartilage.	To ſhut the glottis.
Thyreo-epiglottideus.	The thyroid cartilage.	The ſide of the epiglottis.	To pull the epiglottis obliquely downwards.

Arytæno-

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Arytæno-epiglottideus.	The upper part of the arytænoid cartilage laterally.	The ſide of the epiglottis.	To move the epiglottis outwards.

MUSCLES SITUATED ON THE ANTERIOR PART OF THE ABDOMEN.

Obliquus deſcendens externus.	The lower edges of the eight inferior ribs near their cartilages.	The linea alba †, oſſa pubis, and ſpine of the ilium ‡.	To compreſs the abdomen.
Obliquus aſcendens internus.	The ſpinous proceſſes of the three laſt lumbar vertebræ, back of the ſacrum, and ſpine of the ilium.	The cartilages of all the falſe ribs, linea alba, and pubis, and ſternum, by a flat tendon.	To compreſs the abdomen.

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† A long, but narrow, tendinous expanſion, which reaches from the cartilago enſiformis of the ſternum, down to the middle of the pubis.

‡ In this courſe it forms Poupart's ligament.

Tranſverſalis abdominis.	The cartilages of the ſeven lower ribs, and the tranſverſe proceſſes of the four lower lumbar vertebræ and ſpine of the ilium.	The linea alba, throughout its whole length, and into the enſiform cartilage.	To compreſs the abdominal viſcera.
Rectus abdominis.	The outſide of the ſternum and xyphoid cartilage.	The ſide of the ſymphyſis of the pubis.	To compreſs the abdomen, and bend the trunk.
Pyramidalis.	The anterior upper part of the pubis.	The linea alba, below the umbilicus.	To aſſiſt the lower portion of the rectus.

MUSCLES ABOUT THE MALE ORGANS OF GENERATION.

Darto. *.	By ſome ſaid to be a muſcle: appears, however, to be no more than a condenſation of cellular membrane lining the ſcrotum, which admits of being corrugated and relaxed.		
Cremaſter.	The inguinal ring, and Poupart's ligament.	The tunica vaginalis of the teſticle.	To draw up the teſticle.

Erector

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Erector penis.	The tuberoſity of the iſchium, embraces one crus of the penis.	A ſtrong tendinous membrane, that covers the corpora cavernoſa.	To compreſs the urethra.
Accelerator urinæ ſeu *Ejaculator ſeminis.*	The ſphincter of the anus, and above the bulb of the urethra.	The line in the middle of the bulb.	To compreſs the urethra.
Tranſverſus perinæi.	The fatty membrane covering the tuberoſity of the iſchium.	The accelerator urinæ, and ſphincter ani.	To dilate the bulb of the urethra †.

MUSCLES OF THE ANUS.

Sphincter ani *.	The ſkin and fat ſurrounding the anus on both ſides.	The perinæum, acceleratores urinæ, and tranſverſus perinæi.	To ſhut the paſſage through the anus into the rectum.

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† There is often another muſcle behind this, called *Tranſverſus perinæi alter.* It aſſiſts the former.

Levator ani *.	The internal ſurface of the pubis, ilium, and iſchium, of both ſides, in a radiated manner.	The ſphincter ani, acceleratores urinæ, & os coccygis; and ſurrounds the rectum, neck of the bladder, &c. like a funnel.	To draw the rectum up after the dejection of the fæces, and to aſſiſt in ſhutting it.

MUSCLES OF THE FEMALE ORGANS OF GENERATION.

Erector clitoridis.	The crus of the iſchium internally.	The upper part of the crus and body of the clitoris.	To draw the clitoris downwards, and make it tenſe.
Sphincter vaginæ.	The ſphincter ani, and ſide of the vagina which it ſurrounds.	The union of the crura clitoridis.	To contract the mouth of the vagina.

MUSCLES SITUATED WITHIN THE PELVIS.

Obturator internus.	The foramen ovale obturator ligament, ilium, iſchium, and pubis.	A large pit, between the trochanters of the femur.	To roll the femur obliquely outwards.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Coccygeus.	The ſpinous proceſs of the iſchium.	The extremity of the ſacrum and os coccygis.	To move the coccyx forwards and inwards.

MUSCLES SITUATED WITHIN THE CAVITY OF THE ABDOMEN.

Diaphragma *.	The ſtudent will find deſcribed in SPLANCHNOLOGY.		
Quadratus lumborum.	The poſterior part of the ſpine of the ilium.	The tranſverſe apophyſes of the loins and laſt ſpurious rib.	To ſupport the ſpine and draw it to one ſide.
Pſoas parvus.	The tranſverſe proceſs of the laſt dorſal vertebra.	The brim of the pelvis, near the place of the acetabulum.	To bend the loins forwards.
Pſoas magnus.	The bodies and proceſſes of the laſt dorſal and all the lumbar vertebræ.	The os femoris, a little below the trochanter minor.	To bend the thigh forwards.
Iliacus internus.	The internal ſurface of the ſpine of the ilium.	The femur in common with the pſoas magnus.	To aſſiſt the pſoas magnus.

MUSCLES SITUATED ON THE ANTERIOR PART OF THE THORAX.

Pectoralis major.	The clavicle, ſternum, and ſeven true ribs.	The upper and inner part of the humerus.	To draw the arm forwards, or obliquely forwards.
Subclavius.	The cartilage of the firſt rib.	The under ſurface of the clavicle.	To move the clavicle downwards.
Pectoralis minor.	The third, fourth, and fifth ribs.	The coracoid proceſs of the ſcapula.	To roll the ſcapula.
Serratus major anticus.	The eight ſuperior ribs.	The baſis of the ſcapula.	To bring the ſcapula forwards.

MUSCLES SITUATED BETWEEN THE RIBS AND WITHIN THE THORAX.

Intercoſtales externi.	The lower edge of each upper rib.	The ſuperior edge of each lower rib.	To elevate the ribs.
Intercoſtales interni.	Like the former, their fibres are directed from behind forwards.		
Triangularis vel *Sterno-coſtalis.*	The middle and inferior part of the ſternum.	The cartilages of the five laſt true ribs.	To depreſs the cartilages of the ribs.

MUSCLES

MUSCLES SITUATED ON THE ANTERIOR PART OF THE NECK, CLOSE TO THE VERTEBRÆ.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Longus colli.	The bodies of the three upper dorſal and tranſverſe proceſſes of the four laſt cervical.	The anterior tubercle of the dentatus.	To pull the neck to one ſide.
Rectus internus capitis major.	The tranſverſe proceſſes of the five laſt cervical vertebræ.	The cuneiform proceſs of the os occipitis.	To bend the head forwards.
Rectus internus capitis minor.	The fore part of the atlas.	The os occipitis, near the condyloid proceſs.	To aſſiſt the former.
Rectus capitis lateralis.	The tranſverſe proceſs of the atlas.	The os occipitis, near the maſtoid proceſs.	To move the head to one ſide.

MUSCLES SITUATED ON THE POSTERIOR PART OF THE TRUNK.

Trapezius ſeu *Cucullaris.*	The os occipitis and the ſpinous proceſſes of all the vertebræ of the neck and back.	The clavicle, part of the acromion, and the ſpine of the ſcapula.	To move the ſcapula, bend the neck, and pull the head backwards.

Latiſſimus dorſi.	The ſpine of the ili-	The os humeri, be-	To draw the os hu-

Latiſſimus dorſi.	The ſpine of the ilium, ſpinous proceſſes of the ſacrum, lumbar and inferior dorſal vertebræ; adheres to the ſcapula and inferior falſe ribs.	The os humeri, between its two tuberoſities in the edge of the groove for the tendon of the biceps muſcle.	To draw the os humeri backwards, and to roll it upon its axis.
Serratus poſticus inferior.	The ſpinous proceſſes of the two laſt dorſal and three lumbar vertebræ.	The lower edge of the three or four lowermoſt ribs, near their cartilages.	To draw the ribs outwards, downwards, and backwards.
Rhomboideus.	The ſpinous proceſſes of the three laſt cervical, and four firſt dorſal vertebræ.	The baſis of the ſcapula, at its upper and lower part.	To move the ſcapula upwards and backwards.
Splenius.	The ſpines of the four laſt cervical, and four ſuperior dorſal vertebræ.	The two firſt cervical vertebræ, and the ſide of the os occipitis.	To move the head backwards, and alſo to one ſide.

Serratus

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Serratus ſuperior poſticus.	The ſpinous proceſſes of the three laſt cervical, and two ſuperior dorſal vertebræ.	The ſecond, third, and fourth ribs, by three neat fleſhy tongues.	To expand the thorax, by elevating the ribs.
Spinalis dorſi.	Two ſpinous proceſſes of the loins, and three lower of the back.	All the ſpinous proceſſes of the back, except the firſt.	To extend the vertebræ.
Levatores coſtarum, or *Supra-coſtales.*	The tranſverſe proceſſes of the laſt cervical and the dorſal vertebræ.	The angles of the ribs.	To lift the ribs upwards.
Sacro-lumbalis.	The ſacrum, ſpine of the ilium, and the ſpinous and tranſverſe proceſſes of the lumbar vertebræ.	The lower edge of each rib, by a flat tendon.	To draw the ribs downwards, to move the body upon its axis, to aſſiſt the long. dorſi, and to turn the neck back, or to one ſide.

Longiſſimus dorſi.	The ſame parts as the former, and by one common broad tendon.	The tranſverſe proceſſes of all the dorſal and one cervical vertebræ.	To ſtretch the vertebræ of the back, and keep the trunk erect.
Complexus.	The tranſverſe proceſſes of the four inferior cervical, and ſeven ſuperior dorſal vertebræ.	The middle of the os occipitis, at its tubercle.	To draw the head backwards.
Trachelo-maſtoideus.	The tranſverſe proceſſes of the five lower cervical and three upper dorſal vertebræ.	The os occipitis, behind the maſtoid proceſs of the temporal bone.	To draw the head backwards.
Levator ſcapulæ:	The tranſverſe proceſſes of the four ſuperior cervical vertebræ.	The upper angle of the ſcapula.	To move the ſcapula forwards and upwards.
Semi-ſpinalis dorſi.	The tranſverſe proceſſes of the 7th, 8th, 9th, and 10th dorſal vertebræ.	The ſpinous proceſſes of the four ſuperior dorſal and the laſt cervical vertebræ.	To extend the ſpine obliquely backwards.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Multifidus ſpinæ.	The ſacrum, ilium, oblique and tranſverſe proceſſes of the lumbar, the tranſverſe of the dorſal, and four cervical vertebræ.	The ſpinous proceſſes of the lumbar, dorſal, and cervical vertebræ, except the atlas.	To extend the back, and draw it backwards or to one ſide, and prevent the ſpine from being too much bent forwards.
Semi-ſpinalis colli, or *Spinalis cervicis.*	The tranſverſe proceſſes of the ſix upper dorſal vertebræ.	The ſpinous proceſſes of the five middle cervical.	To ſtretch the neck obliquely backwards.
Tranſverſalis colli.	The tranſverſe proceſſes of the five upper dorſal vertebræ.	The tranſverſe proceſſes of the cervical vertebræ.	To turn the neck obliquely backwards, and to one ſide.
Rectus capitis poſticus major.	The tranſverſe proceſs of the ſecond cervical vertebra.	The lower ridge of the os occipitis.	To extend the head, and draw it backwards.
Rectus capitis poſticus minor.	The firſt vertebra of the neck.	The os occipitis, at its tubercle.	To aſſiſt the *rectus major.*
Obliquus capitis ſuperior.	The tranſverſe proceſs of the atlas.	The end of the lower occipital ridge.	To draw the head backwards.

ſuperior.	ceſs of the atlas.	er occipital ridge.	backwards.

Obliquus capitis inferior.	The ſpinous proceſs of the dentatus.	The tranſverſe proceſs of the atlas.	To draw the face to one ſide.
Scalenus.	The upper ſurface of the firſt and ſecond rib.	The tranſverſe proceſſes of the cervical vertebræ.	To move the neck forwards, or to one ſide.
Interſpinales.	Between the ſpinous proceſſes of the ſix inferior cervical vertebræ.	The ſpinous proceſſes of the vertebræ above.	To draw the ſpinous proceſſes towards each other.
Inter-tranſverſales.	Between the tranſverſe proceſſes of the vertebræ.	The tranſverſe proceſſes of the vertebræ above.	To draw the tranſverſe proceſſes towards each other.

MUSCLES OF THE SUPERIOR EXTREMITIES.

Supra-ſpinatus.	The baſis, ſpine, and upper edge of the ſcapula.	A large tuberoſity at the head of the os humeri.	To raiſe the arm.
Infra-ſpinatus.	The cavity below the ſpine of the ſcapula.	The upper part of the ſame tuberoſity.	To roll the os humeri outwards.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Teres minor.	The inferior edge of the ſcapula.	The greater tuberoſity of the humerus.	To aſſiſt the former.
Teres major.	The inferior angle and edge of the ſcapula.	The ſide of the groove for the long tendon of the biceps.	To aſſiſt in rotating the arm.
Deltoides.	The clavicle, and the acromion and ſpine of the ſcapula.	The anterior and middle part of the os humeri.	To raiſe the arm.
Coraco-brachialis.	The coracoid proceſs of the ſcapula.	The middle and inner ſide of the os humeri.	To roll the arm forwards and upwards.
Subſcapularis.	The baſis, ſuperior and inferior edge of the ſcapula.	The protuberance at the head of the os humeri.	To roll the arm inwards.

MUSCLES SITUATED ON THE OS HUMERI.

Biceps flexor cubiti.	Two heads, one from the coracoid proceſs, the other, called the long head, from the edge of the glenoid cavity of the ſcapula.	The tuberoſity at the upper end of the radius, at its fore part, and a little below its neck. ulna	To bend the fore-arm, which it does with great ſtrength, and to aſſiſt the ſupinators.
Brachialis internus.	The os humeri at each ſide of the tendon of the deltoides.	The coronoid proceſs of the ulna.	To aſſiſt in bending the fore-arm.
Triceps extenſor cubiti.	The neck of the ſcapula, and the neck and middle of the humerus.	The upper and outer part of the olecranon.	To extend the fore-arm.
Anconeus.	The external condyle of the humerus.	The back part or ridge of the ulna.	To aſſiſt in extending the fore-arm.

MUSCLES SITUATED ON THE FORE-ARM.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Supinator radii longus.	The external condyle of the humerus.	The radius, near the ſtyloid proceſs.	To aſſiſt in turning up the palm of the hand.
Extenſor carpi radialis longior.	The external condyle of the humerus.	The metacarpal bone of the fore-finger.	To extend the wriſt.
Extenſor carpi radialis brevior.	The external condyle of the humerus.	The metacarpal bone of the middle finger.	To aſſiſt the former.
Extenſor digitorum communis.	The external condyle of the os humeri.	The back of all the bones of the fingers.	To extend the fingers.
Extenſor minimi digiti.	The outer condyle of the humerus.	The ſecond joint of the little finger.	To aſſiſt in extending the fingers.
Extenſor carpi ulnaris.	The outer condyle of the os humeri.	The metacarpal bone of the little finger.	To aſſiſt in extending the wriſt.
Flexor carpi ulnaris.	The inner condyle of the humerus and olecranon.	The os piſiforme, at its fore-part.	To aſſiſt in bending the hand.

Palmaris longus.	The internal condyle of the os humeri.	The annular ligament of the wriſt, and there forms the aponeuroſis of the hand.	To bend the hand.
Flexor carpi radialis.	The internal condyle of the os humeri.	The metacarpal bone of the fore-finger.	To bend the hand.
Pronator radii teres.	The internal condyle of the humerus and coronoid proceſs of the ulna.	The outer ridge of the radius, about the middle of its length.	To roll the hand inwards.
Supinator radii brevis.	The outer condyle of the humerus, and edge of the ulna.	The anterior, inner, and upper part of the radius.	To roll the radius outwards, and aſſiſt the anconeus.
Extenſor oſſis metacarpi pollicis manûs.	The middle of the ulna, interoſſeous ligament, and radius.	The os trapezium, and firſt bone of the thumb.	To ſtretch the firſt bone of the thumb outwards.
Extenſor primi internodii.	Near the middle of the ulna, interoſſeous ligament, and radius.	The convex part of the ſecond bone of the thumb.	To extend the ſecond bone of the thumb outwards.

Extenſor

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Extenſor ſecundi internodii.	The back of the ulna and interoſſeous ligament.	The third and laſt bone of the thumb.	To ſtretch the thumb obliquely backwards.
Indicator.	The middle of the ulna.	The metacarpal bone of the fore-finger.	To extend the fore-finger.
Flexor digitorum ſublimis.	The inner condyle of the os humeri, coronoid proceſs of the ulna, and upper part of the radius.	The ſecond bone of each finger, after being perforated by the tendons of the profundus.	To bend the ſecond joint of the fingers upon the firſt, and the firſt upon the metacarpal bones.
Flexor digitorum profundus vel perforans.	The upper part of the ulna, and interoſſeous ligament.	The fore part of the laſt bone of each of the fingers.	To bend the laſt joint of the fingers.
Flexor longus pollicis.	The upper and fore part of the radius.	The laſt joint of the thumb.	To bend the laſt joint of the thumb.
Pronator radii quadratus.	The inner and lower part of the ulna.	The radius oppoſite to its origin.	To roll the radius inwards.

MUSCLES SITUATED CHIEFLY ON THE HAND.

Lumbricales.	The tendons of the flexor profundus.	The tendons of the extenſor digitorum communis.	To bend the firſt and extend the ſecond phalanx.
Flexor brevis pollicis manûs.	The os trapezoides, ligament of the wriſt, and the os magnum.	The oſſa ſeſamoidea and ſecond bone of the thumb.	To bend the ſecond joint of the thumb.
Opponens pollicis.	The os ſcaphoides and ligament of the wriſt.	The firſt bone of the thumb.	To bend the thumb.
Abductor pollicis manûs.	The annular ligament, and os trapezium.	The root of the firſt bone of the thumb.	To draw the thumb from the fingers.
Abductor pollicis manûs.	The metacarpal bone of the middle finger.	The root of the firſt bone of the thumb.	To pull the thumb towards the fingers.
Abductor indicis manûs.	The firſt bone of the thumb, and os trapezium.	The firſt bone of the fore-finger poſteriorly.	To move the fore-finger towards the thumb.
Palmaris brevis.	The annular ligament, and palmar aponeuroſis.	The metacarpal bone and ſkin of the little finger.	To contract the palm of the hand.

Abductor

(the Muscles are of great
[illegible]

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Abductor minimi digiti manûs.	The annular ligament and os piſiforme.	The firſt bone of the little finger.	To draw the little finger from the reſt.
Adductor minimi digiti.	The os cuneiforme and carpal ligament.	The metacarpal bone of the little finger.	To move that bone towards the reſt.
Flexor parvus minimi digiti.	The annular ligament and os cuneiforme.	The firſt bone of the little finger.	To draw the little finger from the reſt.
Interoſſei interni and *Interoſſei externi.*	Between the metacarpal bones, to the ſides of which they are attached.		To extend the fingers, and move them towards the thumb.

MUSCLES OF THE INFERIOR EXTREMITIES.

Pectinalis.	The anterior edge of the os pubis.	The upper part of the linea aſpera of the femur.	To bend the thigh.

Triceps adductor femori	*femoris.*	part of the pubis.	back part of the linea aſpera.	
	Adductor brevis femoris.	The fore part and ramus of the os pubis.	The inner and upper part of the linea aſpera.	To bend the thigh, and move it inwards.
	Adductor magnus femoris.	The lower and fore part of the ramus of the pubis.	The whole length of the linea aſpera.	To move the thigh inwards, and aſſiſt in bending it.
Obturator externus. —		The obturator ligament, and half of the thyroid hole.	The femur near the root of the great trochanter.	To pull forwards, and rotate the thigh.
Gluteus maximus. —		The ſpine of the ilium, poſterior ſacro-iſchiatic ligaments, and os ſacrum.	The upper part of the linea aſpera of the femur.	To extend the thigh, and aſſiſt in its rotatory motion.
Gluteus medius. —		The ſpine and ſuperior ſurface of the ilium.	The great trochanter of the os femoris.	To aſſiſt the gluteus maximus.

Gluteus

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Gluteus minimus.	The outer ſurface of the ilium and border of its great notch.	The root of the great trochanter.	To aſſiſt the two former.
Pyriformis.	The anterior part of the os ſacrum.	A cavity at the root of the great trochanter.	To roll the thigh outwards.
Gemini.	The ſpine and tuberoſity of the iſchium.	The ſame cavity as the pyriformis.	To roll the thigh outwards.
Quadratus femoris.	The tuberoſity of the iſchium.	A ridge between the two trochanters.	To move the thigh outwards.

MUSCLES SITUATED ON THE THIGH.

Faſcialis, or *Tenſor vaginæ femoris.*	The upper ſpinous proceſs of the ilium.	The inner ſide of the membranous faſcia which covers the thigh.	To ſtretch the faſcia.
Sartorius.	The upper ſpinous proceſs of the ilium.	The upper and inner part of the tibia.	To bend the leg inwards.
Gracilis.	The fore part of the iſchium and pubis.	The upper and inner part of the tibia.	To bend the leg.

Rectus femoris, vel *Rectus cruris.*	The lower ſpinous proceſs of the ilium, & edge of the acetabulum.	The upper and fore part of the patella.	To extend the leg.
Vaſtus externus.	The root of the great trochanter, and linea aſpera.	The upper and lateral part of the patella.	To extend the leg.
Vaſtus internus.	The trochanter minor, & the linea aſpera.	The upper and inner part of the patella.	To extend the leg.
Cruralis, or *Cruræus.*	The anterior part of the leſſer trochanter.	The upper part of the patella.	To extend the leg.
Semi-tendinoſus.	The tuberoſity of the iſchium.	The upper and inner part of the tibia.	To bend and draw the leg inwards.
Semi-membranoſus.	The tuberoſity of the iſchium.	The back part of the head of the tibia.	To bend the leg.
Biceps flexor cruris.	The tuberoſity of the iſchium.	The upper and back part of the tibia, forming the *outer hamſtring.*	To bend the leg.

Popliteus.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Popliteus.	The external condyle of the thigh bone.	The upper and inner part of the tibia.	To aſſiſt in bending the leg.

MUSCLES SITUATED ON THE LEG.

Gaſtrocnemius externus, or *Gemellus.*	The internal and external condyle of the femur.	The os calcis, with the tendon of the ſoleus.	To extend the foot.
Gaſtrocnemius internus, or *Soleus.*	The head of the fibula, and back part of the head of the tibia.	The os calcis, by a common tendon, which is called *tendo Achillis.*	To extend the foot.
Plantaris.	The outer condyle of the os femoris and capſular ligament.	The os calcis, near the tendo Achillis.	To aſſiſt in extending the foot.
Tibialis anticus.	The upper and fore part of the tibia.	The os cuneiforme internum.	To bend the foot.
Tibialis poſticus.	The back part of the tibia, interoſſeous ligament, and adjacent part of the fibula.	The middle cuneiform bone, and upper part of the os naviculare.	To move the foot inwards.

Peroneus longus.	The head of the tibia, and upper and outer part of the fibula.	The metatarſal bone of the great toe.	To move the foot outwards.
Peroneus brevis.	The outer and fore part of the fibula.	The metatarſal bone of the little toe.	To aſſiſt the peroneus longus.
Extenſor longus digitorum pedis.	The upper part of the tibia, interoſſeous ligament, and inner edge of the fibula.	The firſt joint of the ſmaller toes by four tendons.	To extend the toes, and ſeparate them from one another.
Extenſor proprius pollicis pedis.	The upper and fore part of the tibia.	The convex ſurface of the bones of the great toe.	To extend the great toe.
Flexor longus digitorum pedis †, *profundus, perforans.*	The upper and inner part of the tibia.	The laſt bones of all the toes, except the great toe, by four tendons.	To bend the laſt joint of the toes.

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† The tendons of this muſcle paſs through the perforations in thoſe of the flexor digitorum brevis. There is, about the middle of the foot, a fleſhy maſs, which unites with this muſcle, called after Jacobus Sylvius, who firſt deſcribed it.

Name.	*Ariſes from*	*Inſerted into*	*Uſe.*
Flexor longus pollicis pedis.	A little below the head of the fibula.	The laſt bone of the great toe.	To bend the great toe.
MUSCLES CHIEFLY SITUATED ON THE FOOT.			
Extenſor brevis digitorum pedis.	The upper and anterior part of the os calcis.	The firſt bone of the great and other toes, except the little.	To extend the toes.
Flexor brevis digitorum pedis, perforatus ſublimis.	The lower part of the os calcis.	The ſecond phalanx of each of the ſmall toes, by four tendons, which are perforated by thoſe of the flex. long. dig. ped	To bend the ſecond joint of the toes.
Lumbricales pedis.	The tendons of the flexor longus digitorum pedis.	The tendinous expanſion at the upper part of the toes.	To draw the toes inwards.
Flexor brevis pollicis pedis.	The fore part of the os calcis, and external cuneiform bone.	The firſt joint of the great toe, by two tendons.	To bend the firſt joint of the great toe.

Abductor pollicis pedis.	The inner and lower part of the os calcis.	The firſt joint of the great toe.	To move the great toe from the reſt.
Adductor pollicis pedis.	The ligament extended from the os calcis to the os cuboides.	The outer ſeſamoid bone, or firſt joint of the great toe.	To draw the great toe nearer to the reſt, and to bend it.
Abductor minimi digiti pedis.	The tuber of the os calcis, and metatarſal bone of the little toe.	The firſt joint of the little toe externally.	To draw the little toe outwards.
Flexor brevis minimi digiti pedis.	The root of the metatarſal bone of the little toe.	The root of the firſt bone of the little toe.	To bend the little toe.
Tranſverſales pedis.	The ligament connecting the bones of the tarſus.	The tendon of the adductor pollicis.	To contract the foot.
Interoſſei pedis interni. *Interoſſei pedis externi.*	Between the metatarſal bones.		To draw the ſmaller toes towards the great toe, and aſſiſt in extending the toes.

PHYSIOLOGY AND PHENOMENA OF MUSCULAR MOTION.

Muſcular motions are of three kinds; namely, voluntary, involuntary, and mixed. The VOLUNTARY MOTIONS of muſcles are ſuch as proceed from an immediate exertion of the active powers of the will: thus the mind directs the arm to be raiſed or depreſſed, the knee to be bent, the tongue to move, &c. The INVOLUNTARY MOTIONS of muſcles are thoſe which are performed by organs, ſeemingly of their own accord, without any attention of the mind or conſciouſneſs of its active power; as the contraction and dilatation of the heart, arteries, veins, abſorbents, ſtomach, inteſtines, &c. The MIXED MOTIONS are thoſe which are in part under the control of the will, but which ordinarily act without our being conſcious of their acting; as is perceived in the muſcles of reſpiration, the intercoſtals, the abdominal muſcles, and the diaphragm.

When a muſcle acts, it becomes ſhorter and thicker; both its origin and inſertion are drawn towards its middle. The ſphincter muſcles are always in action; and ſo likewiſe are antagoniſt muſcles, even when they ſeem at reſt. When two antagoniſt muſcles move with equal force, the part which they are deſigned to move remains at reſt; but if one of the antagoniſt muſcles remains at reſt, while the other acts, the part is moved towards the centre of motion.

All the muſcles of living animals are conſtantly endeavouring to ſhorten themſelves.

When a muſcle is divided, it contracts. If a muſcle be ſtretched to a certain extent, it contracts, and endeavours to acquire its former dimenſions, as ſoon as the ſtretching cauſe is removed: this takes place in the dead body; in muſcles cut out of the body, and alſo in parts not muſcular, and is called by the immortal HALLER *vis mortua*, and by ſome *vis elaſtica.* It is greater in living than in dead bodies, and is called the *tone* of the muſcles.

When a muſcle is wounded, touched, or otherwiſe irritated, it contracts independent of the will; this power is called IRRITABILITY, and by Haller *vis inſita;* it is a property peculiar to and inherent in the muſcles. The parts of our body which poſſeſs this property are called irritable, as the heart, arteries, muſcles, &c. to diſtinguiſh them from thoſe parts which have no muſcular fibres. With regard to the degree of this property peculiar to various parts, the heart is the moſt irritable, then the ſtomach and inteſtines; the diaphragm, the arteries, veins, abſorbents, and at length the various muſcles follow; but the degree of irritability depends upon the age, ſex, temperament, mode of living, climate, ſtate of health, idioſyncraſy, and likewiſe upon the nature of the ſtimulus.

When a muſcle is ſtimulated, either through the medium of the will or any foreign body, it contracts, and its contraction is greater or leſs in proportion as the ſtimulus applied is greater or leſs. The contraction of muſcles is different according to the purpoſe to be ſerved by their contraction: thus, the heart contracts with a jerk; the urinary bladder, ſlowly and uniformly; puncture a muſcle, and its fibres vibrate; and the abdominal muſcles act ſlowly in expelling the contents of the rectum. Relaxation generally ſucceeds the contraction of muſcles, and alternates with it.

The USE of this property is very conſiderable; for upon it depends all muſcular motion, and the function of every viſcus, except that of the nerves.

BURSALOGY,

OR

DOCTRINE OF THE BURSÆ MUCOSÆ.

BURSÆ mucoſæ are mucous bags, compoſed of a proper membrane, containing a kind of mucous fat, formed by the exhaling arteries of their internal ſurface. They are of different SIZES and FIRMNESS, and are CONNECTED here and there by cellular membrane, with the capſular ligaments of cavities, tendons, bones, or ligaments.

Their *internal ſurface* is highly vaſcular, ſmooth, and ſhining. SITUATION. Various. DIVISION, into vaginal and veſicular. USE. To lubricate the muſcles and tendons, which are very frequently in motion.

BURSÆ MUCOSÆ OF THE HEAD.

1. *A burſa of the ſuperior oblique muſcle* of the eye, ſituated behind its trochlea in the orbit. 2. *The burſa of the digaſtricus,* ſituated in the internal ſurface of its tendon. 3. *A burſa of the circumflexus,* or tenſor palati, ſituated between the hook-like proceſs of the ſphænoid bone and the tendon of that muſcle. 4. *A burſa of the ſterno-hyoideus muſcle,* ſituated between the os hyoides and larynx.

BURSÆ MUCOSÆ, SITUATED ABOUT THE SHOULDER JOINT.

1. *The external acromial,* ſituated under the acromion, between the coracoid proceſs, deltoid muſcle, and capſular ligament. 2. *The internal acromial,* ſituated above the tendon of the infra-ſpinatus and teres major: it often communicates with the former. 3. *The coracoid burſa,* ſituated near the root of the coracoid proceſs: it is ſometimes double, and ſometimes triple. 4. *The clavicular burſa,* found where the clavicle touches the coracoid proceſs. 5. *The ſubclavian burſa,* between the tendon of the ſubclavicularis muſcle and the firſt rib. 6. *The coraco-brachial,* placed between the common origin of this muſcle and the biceps and the

capſular ligament. 7. *The burſa of the pectoralis major*, ſituated under the head of the humerus, between the internal ſurface of the tendon of that muſcle and another burſa placed on the long head of the biceps. 8. *An external burſa of the teres major*, under the head of the os humeri, between it and the tendon of the teres major. 9. *An internal burſa of the teres major*, found within the muſcle where the fibres of its tendon diverge. 10. *A burſa of the latiſſimus dorſi*, between the tendon of this muſcle and the os humeri. 11. *The humero-bicipital burſa*, in the vagina of the tendon of the biceps. There are other burſæ mucoſæ about the humerus, but their ſituation is uncertain.

BURSÆ MUCOSÆ, SITUATED NEAR THE ELBOW JOINT.

1. *The radio-bicipital*, ſituated between the tendon of the biceps, brachialis, and anterior tubercle of the radius. 2. *The cubito-radial*, between the tendon of the biceps, ſupinator brevis, and the ligament common to the radius and ulna. 3. *The anconeal burſa*, between the olecranon and tendon of the anconeus muſcle. 4. *The capitulo-radial burſa*, between the tendon common to the extenſor carpi radialis brevis, and extenſor communis digitorum and round head of the radius.

There are other burſæ, but as their ſituation varies, they are omitted.

BURSÆ OF THE INFERIOR PART OF THE FORE-ARM AND HAND.

On the Inſide of the Wriſt and Hand.

1. A very *large burſa*, for the tendon of the flexor pollicis longus. 2. *Four ſhort burſæ* on the fore part of the tendons of the flexor ſublimis 3. *A large burſa* behind the tendon of the flexor pollicis longus, between it and the fore part of the radius, capſular ligament of the wriſt, and os trapezium. 4. *A large burſa* behind the tendons of the flexor digitorum profundus and on the fore part of the end of the radius, and fore part of the capſular ligament of the wriſt. In ſome ſubjects it communicates with the former. 5. *An oblong burſa*, between the tendon of the flexor carpi radialis and os trapezium. 6. *A very ſmall burſa* between the tendon of the flexor carpi ulnaris and os piſiforme.

On the back Part of the Wriſt and Hand.

7. *A burſa* between the tendon of the abductor pollicis longus and the radius. 8. *A large burſa* between the two extenſores carpi radiales. 9. *Another* below it, common to the extenſores carpi radiales. 10. *A burſa*, at the inſertion of the tendon of the extenſor carpi radialis. 11. *An ob-*

long burſa, for the tendon of the extenſor pollicis longus, and which communicates with 9. 12. *A burſa,* for the tendon of the extenſor pollicis longus, between it and the metacarpal bone of the thumb. 13. *A burſa* between the tendons of the extenſor of the fore, middle, and ring fingers. 14. *A burſa* for the extenſors of the little finger. 15. *A burſa* between the tendon of the extenſor carpi ulnaris and ligament of the wriſt. There are alſo burſæ mucoſæ between the muſculi lumbricales and interoſſei.

BURSÆ SITUATED NEAR THE HIP JOINT.

On the fore Part of the Joint.

1. The *ileo-puberal,* ſituated between the iliacus internus, pſoas magnus, and the capſular ligament of the head of the femur. 2. The *pectineal,* between the tendon of the pectineus and the thigh-bone. 3. *A ſmall burſa* of the gluteus medius muſcle, ſituated between it and the great trochanter, before the inſertion of the pyriformis. 4. *A burſa* of the gluteus minimus muſcle between its tendon and the great trochanter. 5. *The gluteo-faſcial,* between the gluteus maximus and vaſtus externus.

On the poſterior Part of the Hip Joint.

6. *The tubero-iſchiatic burſa,* ſituated between the obturator internus muſcle, the poſterior ſpine of the iſchium, and its tuberoſity. 7. *The obturatory*

burſa, which is oblong, and found between the obturator internus and gemini muſcles and the capſular ligament. 8. *A burſa of the ſemi-membranoſus*, under its origin and the long head of the biceps femoris. 9. *The gluteo-trochanteral burſa*, ſituated between the tendon of the pſoas muſcle and the root of the great trochanter. 10. *Two gluteo-femoral burſæ*, ſituated between the tendon of the gluteus maximus and os femoris. 11. *A burſa of the quadratus femoris*, ſituated between it and the little trochanter. 12. *The iliac burſa*, ſituated between the tendon of the iliacus internus and the little trochanter.

BURSÆ MUCOSÆ, SITUATED NEAR THE KNEE JOINT.

1. *The ſupra-genual*, which adheres to the tendons of the vaſtus and cruralis and the fore part of the thigh bone. 2. *The infra-genual burſa*, ſituated under the ligament of the patella, and often communicates with the above. 3. *The anterior genual*, placed between the tendon of the ſartorius gracilis and ſemitendinoſus and internal and lateral ligament of the knee. 4. *The poſterior genual*, which is ſometimes double, and is ſituated between the tendons of the ſemi-membranoſus, the internal head of the gaſtrocnemius, the capſular ligament, and internal condyle. 5. *The popliteal*, conſpicuous between the tendon of that muſcle,

the external condyle of the femur, the ſemilunar cartilage, and external condyle of the tibia. 6. *The burſa of the biceps cruris*, between the external part of the tendon, the biceps cruris, and the external lateral ligament of the knee.

BURSÆ MUCOSÆ, SITUATED IN THE FOOT.

On the Back, Side, and hind Part of the Foot.

1. *A burſa of the tibialis anticus*, between its tendon, the lower part of the tibia, and capſular ligament of the ankle. 2. *A burſa* between the tendon of the extenſor pollicis pedis longus, the tibia and capſular ligament of the ankle. 3. *A burſa of the extenſor digitorum communis*, between its tendons, the tibia and ligament of the ankle. 4. *A large burſa*, common to the tendons of the peronei muſcles. 5. *A burſa of the peroneus brevis*, proper to its tendon. 6. *The calcaneal burſa*, between the tendo Achillis and os calcis.

In the Sole of the Foot.

1. *A burſa for the tendon of the peroneus longus.* 2. *A burſa* common to the tendon of the flexor pollicis pedis longus, and the tendon of the flexor digitorum pedis communis longus profundus. 3. *A burſa of the tibialis poſticus*, between its tendon, the tibia, and aſtragalus. 4. *Five burſæ for the flexor tendons*, which begin a little above the firſt joint of each toe, and extend to the root of the third phalanx or inſertion of the tendons.

ANGIOLOGY,

OR

DOCTRINE OF THE VESSELS.

Vessels are long, membranous canals, which carry blood, lymph, or chyle. **Division**, into arteries, veins, and abſorbents. **Situation.** Except the epidermis, membrana arachnoidea, and nails, every part of the body has veſſels, which injections demonſtrate.

OF ARTERIES.

Arteries are elaſtic membranous canals, which pulſate: they always become narrower as they proceed from the heart towards the extremities. **Origin**, from the ventricles of the heart; namely, the pulmonary artery from the right, and the aorta from the left, ventricle: ſo that there are only two arteries, of which the reſt are branches. **Termination**, in veins, exhaling veſſels, or they anaſtomoſe with one another. **Composed** of three membranes, called coats; an external one, a middle coat, which is muſcular, and an inner one, which is ſmooth. **Use**, to convey blood from the heart to the different parts of the body, for nutrition; preſervation of life; generation of heat; and the ſecretion of different fluids.

OF THE AORTA.

The aorta ariſes from the left ventricle of the heart, forms an *arch* towards the dorſal vertebræ, then *deſcends* through the opening of the diaphragm into the abdomen, in which it proceeds by the left ſide of the ſpine to the laſt vertebra of the loins, where it divides into the two iliac arteries. In this courſe it gives off, juſt above its origin, two *coronary* arteries to the heart, and then forms an arch.

The ARCH OF THE AORTA gives off three branches, which ſupply the head, neck, and arms, with blood; theſe are,

I. ARTERIA INNOMINATA, which divides into the right carotid and right ſubclavian arteries.

II. THE LEFT CAROTID.

III. THE LEFT SUBCLAVIAN.

THE CAROTID ARTERIES, having emerged from the cheſt, run up along the neck one on each ſide of the trachea, to the angle of the lower jaw, where they divide into external and internal.

THE EXTERNAL CAROTID gives off eight branches to the neck and face.

1. *Arteria Thyroidea*, which is very tortuous, ſupplies the thyroid gland, and gives off branches to ſeveral adjacent muſcles.

2. *A. Lingualis*, which lies flat upon the ſide of the tongue, and gives off the *ramus hyoideus*, *dorſalis linguæ*, *ſublingualis*, and *ranina*.

3. *A. Labialis*, called alſo the *external maxillary*, the *angular*, and facial artery: it gives off the *palatina inferior*, the *ſubmentalis*, and the *coronary of the lips*.

4. *A. Pharyngea inferior*, which ſends a number of ſmall twigs about the fauces and baſis of the cranium.

5. *A. Occipitalis*, from which the *poſterior temporal* ariſes.

6. *A. Poſterior auris*, which furniſhes the parts about the cartilages of the ear with blood, and tranſmits the *arteria tympani* and *ſtylo-maſtoidea*.

7. *A. Maxillaris interna*, which is extremely tortuous, and gives off—the *ſpinous artery* to the dura mater—the *lower maxillary artery*, which is included in the lower jaw, and ſupplies the teeth and face—the *pterygoid arteries*, which nouriſh the pterygoid muſcles—*two deep temporal arteries*, which lie wider than the temporal muſcle. The internal maxillary then gives off *a branch*, which almoſt immediately divides into the *alveolar* and *infra-orbital*; then an artery to the palate, the *ſuperior palatine*; the *upper pharyngeal*, which plays about the ſphænoid ſinus; and, laſtly, the *naſal artery*, which is tranſmitted through the ſphæno-palatine foramen to the cavity of the noſtrils.

8. *A. Temporalis*, which perforates the parotid gland, and ſends off the *tranſverſalis faciei*, which inoſculates with the arteries of the face; and ſeveral

branches which go to the ear, forehead, and about the temples.

THE INTERNAL CAROTID leaves the external at the angle of the jaw, and proceeds by the par vagum and intercoſtal nerve to the carotid canal in the petrous portion of the temporal bone, where it is ſhaped like the letter *ſ*, and enters the cranium at the ſide of the ſella turcica, having given off *two* very ſmall *twigs* to the pituitary gland, and 3d, 4th, and 5th pair of nerves; and when it has reached the anterior clinoid proceſs, it ſends off—

1. *Arteria Ophthalmica*, which is diſtributed on the eye.

2. *A. Anterior cerebri*, which proceeds before the ſella turcica, unites with its fellow, and forms the circle of Willis, from which a branch proceeds to the third ventricle, ſeptum lucidum and the *arteria corporis calloſi.*

3. *A. Media cerebri*, which runs between the anterior and middle lobes of the brain, gives off the *artery of the choroid plexus*, and is loſt on the middle lobe of the brain.

4. *A. Communicans*, which proceeds backwards, and ſoon inoſculates with the vertebral.

THE SUBCLAVIAN ARTERY ariſes on the right ſide, from the arteria innominata, and on the left, from the arch of the aorta. Each ſubclavian gives off five branches.

1. The *internal mammary*, from which ariſe the *A. thymica*, *A. comes phrenici*, the *pericardiac*, and the *phrenico-pericardiac*.

2. The *inferior thyroid*, from which ariſe the *ramus thyroideus*, the *tracheal arteries*, the *aſcending thyroid*, and the *tranſverſalis humeri*.

3. *A. Vertebralis*, which proceeds into the vertebral foramina, to aſcend into the cavity of the cranium, where it unites upon the cuneiform proceſs of the occipital bone with its fellow of the other ſide, and forms the BASILARY ARTERY, which immediately gives off the *poſterior* artery of the cerebellum; it then proceeds upon the tuberculum annulare, to give off four branches, two to the right, and two to the left, which conſtitute the *A. anterior cerebelli*, which branch to the crura cerebelli, the cerebellum, vermis, crura cerebri, corpora quadrigemina, pineal gland, and fourth ventricle; and the *A. poſterior cerebri*, which is joined by the *communicans*, and ſupply the thalami nervorum opticorum, the centrum geminum, infundibulum, and crura fornicis, and the poſterior lobes of the brain, inoſculating with ſeveral arteries.

4. *A. Cervicalis profunda.*

5. *A. Cervicalis ſuperficialis*, both of which are diſtributed about the muſcles of the neck.

6. *A. Intercoſtalis ſuperior*, which lies between the two upper ribs.

7. *A. Supra-ſcapularis*, which ſometimes ariſes from the A. thyroidea, when it is called the *tranſverſalis humeri*.

As ſoon as the ſubclavian has arrived in the axilla, it is called the AXILLARY ARTERY, which runs into the arm, where it is termed the BRACHIAL.

The AXILLARY ARTERY gives off,

1. *The four mammary arteries*, called *thoracica ſuperior; thoracica longior; thoracica humeriana*, and *thoracica alaris* or *axillaris*, which ſupply blood to the muſcles about the breaſt.

2. *The ſub-ſcapularis*, which ſupplies the lower ſurface of the ſcapula.

3. *The circumflexa poſterior*.

4. *Circumflexa anterior*, which ramify about the joint.

The BRACHIAL OR HUMERAL artery gives off,

1. *Many lateral veſſels.*

2. *A. Profunda humeri ſuperior.*

3. *A. Profunda humeri inferior.*

4. *Ramus anaſtomoticus magnus*, which anaſtomoſes round the elbow joint.

The brachial then becomes the ulnar, and gives off the RADIAL.

The ULNAR OR CUBITAL ARTERY ſends off,

1. *The recurrent branches*, which anaſtomoſe with the ramus anaſtomoticus magnus.

2. *A. Interoſſea communis*. It then ſends ſmall branches to the adjacent muſcles, as it proceeds

down to the wriſt; juſt before it arrives here, it gives off *A. dorſalis ulnaris*, which goes round to the back of the little finger. At the wriſt it gives off *A. palmaris profunda;* then forms a great arterial arch, called the *ſuperficial palmar arch*, which ſupplies branches to the fingers.

The RADIAL gives off the *radial recurrent*, proceeds to the wriſt, where the pulſe is felt, and gives off the *ſuperficialis volæ*, and then divides into the *A. dorſalis pollicis*, *A. radialis indicis*, *A. magna pollicis*, and *A. palmaris profunda*.

The DESCENDING AORTA gives off, *in the breaſt*,

1. *The bronchial*, which nouriſh the lungs.
2. *The æſophageal*, which go to the æſophagus.
3. *The intercoſtals*, between the ribs.
4. *The inferior diaphragmatic*.

Within the abdomen, it gives off eight branches.

1. THE CŒLIAC, which divides into three branches.

1. *Arteria Hepatica*, which gives off,

α. *A. Duodeno-gaſtrica*, which ſends off *the right gaſtro-epiploic* and *the pancreatico-duodenalis*. The latter tranſmits *the pilorica inferior* and *the tranſverſe pancreatic*.

β. *A. Pilorica ſuperior hepatica*.

The hepatic artery then ramifies through the liver.

2. *A. Coronaria ventriculi*, or *Gaſtrica*, which gives off the *ſuperior coronary* and *ſuperior piloric arteries*.

3. *A. Splenica*, from which ariſe *the pancreatica magna* and *pancreaticæ parvæ*, the *poſterior gaſtric arteries*, the *left gaſtro-epiploic artery*, and *the vaſa brevia.*

2. *The ſuperior meſenteric*, or *meſeraic*, of which the *colica media*, *colica dextra*, and the *ileo-colica* are branches.

3. *The renal arteries*, or *emulgents*, which are ſhort, and divide into three or four branches in the pelvis of the kidney.

4. *The ſpermatic arteries*, which are very ſmall and long, and proceed with the ſpermatic cord to the teſticles.

5. *The inferior meſeraic*, from which ariſes the *left colic artery* and *the internal hæmorrhoidal.*

6. *The lumbar arteries*, which nouriſh the muſcles and vertebræ of the loins.

7. *The middle ſacral artery*, which is diſtributed about the ſacrum.

The aorta then bifurcates, and becomes the iliac arteries.

The iliacs ſoon divide into *internal* and *external.*

Each INTERNAL ILIAC OF HYPOGASTRIC ARTERY gives off five branches:

1. *The lateral ſacral arteries*, three or four in number.

2. *The gluteal*, which ramify upon the back of the haunch bone, and ſupply the gluteal muſcles.

3. *The iſchiatic*, which turns downwards along the hip, and gives off the *coccygeal artery.*

4. *Arteria pudica communis*, which is ſometimes a branch of the ſciatic artery; it proceeds out of the pelvis, through the ſciatic notch, returns into the pelvis, and runs towards the ſymphyſis of the pubis. In this courſe it gives off *branches* to the veſiculæ ſeminales and proſtate gland; and the *lower* or *external hæmorrhoidal artery* to the anus, and then forms the *A. perinei*, the *A. penis*, which proceed one on each ſide; and *a branch* which plunges deep into the ſubſtance of the penis.

5. *The obturatory*, which paſſes through the oval foramen, and is diſtributed on the thick muſcles in the centre of the thigh.

Each EXTERNAL ILIAC gives off,

1. *The epigaſtric*, which is reflected from Poupart's ligament upwards, along the abdomen.

2. *A. Circumflexa iliaca*, which runs backwards along the criſta ilii.

THE EXTERNAL ILIAC then paſſes under Poupart's ligament, becomes the FEMORAL OR CRURAL ARTERY, and is continued along the thigh into the popliteal. In this courſe it gives off near the groin,

1. *The profunda femoris*, which gives off the *A. perforans prima*; the *A. perforans ſecunda magna*; the *A. perforans tertia*; the *A. perforans quarta*, which nouriſh the muſcles of the thigh. The fe-

moral artery then makes a ſpiral turn round the os femoris, and ſends off ſmall branches of no importance to adjacent muſcles. About two hands breadth from the knee it gives out,

2. *The Ramus anaſtomoticus magnus*, which ramifies about the knee joint.

The femoral artery having reached the ham is called the POPLITEAL, which gives off ſeveral ſmall branches about the joint, and divides below the ham into the *tibialis antica* and *tibialis poſtica*.

The TIBIALIS ANTICA ſoon perforates the interoſſeous ligament, and paſſes along the tibia over the bones of the tarſus, and then inoſculates with the back arteries. In this courſe it gives off,

1. *The recurrent*, which inoſculates with the articular branches of the popliteal: it then ſends off ſmall branches to neighbouring muſcles, as it paſſes down the leg.

2. *A. Malleolaris interna*, about the inner ankle.

3. *A. Malleolaris externa*, about the outer ankle.

4. *A. Tarſea*, which lies upon the bones of the tarſus.

5. *A. Metatarſea*, to the tendons of the peronei muſcles.

6. *Dorſalis externa halucis*, which runs along the metatarſal bone of the great toe.

The TIBIALIS POSTICA paſſes along the back part of the tibia, goes round the inner ankle, and divides at the heel into the two plantar arteries. In this courſe it ſends off,

1. *A. Nutritia tibiæ*, which gives branches to the popliteus, ſoleus and tibialis anticus muſcles, before it enters the bone.

2. *Many ſmall branches*, as it paſſes downwards.

3. *A. Plantaris interna*, which runs along the inner edge of the ſole of the foot, and ſends off *four branches* about the foot.

4. *A. Plantaris interna*, which forms an arch and inoſculates with the anterior tibial artery, and gives off the *digital branches* to the toes.

PULMONARY ARTERY.

The pulmonary artery ariſes from the right ventricle of the heart, and conveys the blood into the lungs, that is returned to the heart by the veins; not for their nutrition, but to receive from the air in the lungs a certain principle, neceſſary for the continuance of life, and which the arterial blood diſtributes to every part of the body. It ſoon divides into a *right* and *left*, the right going to the right lung and the left to the left lung, where they divide into innumerable ramifications, and form a beautiful *net-work*, or *plexus of veſſels*, upon the air veſicles, and then terminate in the pulmonary veins.

THE ACTION OF THE ARTERIES.

The arteries, by the impulſe of the blood from the ventricles of the heart, are dilated and irritated, and by means of their muſcular coat contract upon the blood, and thus propel it to the glands, muſcles, bones, membranes, and every part of the body for their nutrition and the various ſecretions, and then into the veins. This dilatation and contraction is called the PULSE, which is perceptible in the trunks and branches of the arteries, but not in the capillary veſſels, except when inflammation is going on.

OF VEINS.

VEINS are membranous canals which do not pulſate: they gradually become larger as they advance towards the heart, in which they terminate, and bring back the blood from the arteries. ORIGIN. From the extremities of the arteries by anaſtomoſis. TERMINATION of all the veins is into the auricles of the heart. DIVISION, into trunks, branches, ramuli, &c. SITUATION. They run by the ſides of arteries, but more ſuperficially. COMPOSED like arteries of three membranes, but which are ſemi-tranſparent and more delicate. VALVES are thin ſemi-lunar membranous folds, which prevent the return of the blood in the vein.

The blood is returned from every part of the body into the right auricle:—the vena cava ſuperior receives it from the head, neck, thorax, and ſuperior extremities:—the vena cava inferior from the abdomen and inferior extremities:—and the coronary vein receives it from the coronary arteries of the heart.

THE VENA CAVA SUPERIOR.

This vein terminates in the ſuperior part of the right auricle, into which it evacuates the blood, from

The *right and left ſubclavian veins*, and the *vena azygos*.

The right and left ſubclavian veins receive the blood from the head and upper extremities, in the following manner.

The veins of the fingers, called *digitals*, receive their blood from the digital arteries, and empty it into,

1. The *cephalic of the thumb*, which runs on the back of the hand along the thumb, and evacuates itſelf into the external radial.

2. The *ſalvatella*, which runs along the little finger, unites with the former, and empties its blood into the internal and external cubital veins. At the bend of the fore-arm are three veins, called the great cephalic, the baſilic, and the median.

THE GREAT CEPHALIC runs along the ſuperior part of the fore-arm, and receives the blood from the external radial.

THE BASILIC aſcends on the under ſide, and receives the blood from the *external* and *internal cubital veins*, and ſome branches which accompany the brachial artery, called *venæ ſatellitum*.

The median is ſituated in the middle of the fore-arm, and ariſes from the union of ſeveral branches. Theſe three veins all unite above the bend of the arm, and form

The brachial vein, which receives all their blood, and is continued into the axilla, where it is called

The axillary vein. This receives alſo the blood from the ſcapula, and ſuperior and inferior parts of the cheſt, by the *ſuperior* and *inferior thoracic vein*, the *vena muſcularis*, and the *ſcapularis.*

The axillary vein then paſſes under the clavicle, where it is called the **subclavian**, which unites with the external and internal jugular veins, and the vertebral vein which brings the blood from the vertebral ſinuſes; it receives alſo the blood from the *mediaſtinal*, *pericardiac*, *diaphragmatic*, *thymic*, *internal mammary* and *laryngeal* veins, and then unites with its fellow, to form the vena cava ſuperior, or, as it is ſometimes called, *vena cava deſcendens.*

The blood from the external and internal parts of the head and face is returned in the following manner into the external and internal jugulars, which terminate in the ſubclavians.

The *frontal*, *angular*, *temporal*, *auricular*, *ſublingual*, and *occipital* veins receive the blood from the parts after which they are named; theſe all converge to each ſide of the neck, and form a trunk, called the **external jugular vein.**

The blood from the brain, cerebellum, medulla oblongata, and membranes of theſe parts, is received into the lateral ſinuſes, or veins of the dura mater, one of which empties its blood through the foramen lacerum in baſi cranii into the INTERNAL JUGULAR, which deſcends in the neck by the carotid arteries, receives the blood from the *thyroideal* and *internal maxillary veins*, and empties itſelf into the ſubclavians within the thorax.

The vena azygos receives the blood from the *bronchial*, *ſuperior æſophageal*, *vertebral* and *intercoſtal veins*, and empties it into the ſuperior cava.

VENA CAVA INFERIOR.

The vena cava inferior is the trunk of all the abdominal veins and thoſe of the lower extremities, from which parts the blood is returned in the following manner. The veins of the toes, called the *digital veins*, receive the blood from the digital arteries, and form on the back of the foot three branches, one on the great toe called the *cephalic*, another which runs along the little toe, called the *vena ſaphena*, and one on the back of the foot, *vena dorſalis pedis*; and on the ſole of the foot they evacuate themſelves into the *plantar veins*.

The three veins on the upper part of the foot coming together above the ankle, form the *anterior tibial*; and the plantar veins with a branch from the calf of the leg, called the *ſural vein*, form the *poſterior tibial:* a branch alſo aſcends in the direction of the fibula, called the *peroneal vein.* Theſe three branches unite before the ham, into one branch, the *ſub-popliteal vein,* which aſcends through the ham, carrying all the blood from the foot: it then proceeds upon the anterior part of the thigh, where it is termed the *crural* or *femoral vein,* receives ſeveral muſcular branches, and paſſes under Poupart's ligament into the cavity of the pelvis, where it is called the EXTERNAL ILIAC.

The arteries which are diſtributed about the pelvis evacuate their blood into the *external hæmorrhoidal veins,* the *hypogaſtric veins,* the *internal pudendal,* the *vena magna ipſius penis,* and *obturatory veins,* all of which unite in the pelvis, and form the INTERNAL ILIAC VEIN.

The external iliac vein receives the blood from the external pudendal veins, and then unites with the internal iliac at the laſt vertebra of the loins, and form the VENA CAVA INFERIOR, or ASCENDENS, which aſcends on the right ſide of the ſpine, receiving the blood from the *ſacral, lumbar, right ſpermatic veins,* and the *vena cava hepatica;* and having arrived at the diaphragm, it paſſes through the right foramen, and enters the right auricle of the heart, into which it evacuates all the blood from the abdominal viſcera and lower extremities.

VENA CAVA HEPATICA.

This vein ramifies in the ſubſtance of the liver, and brings the blood into the vena cava inferior from the branches of the VENA PORTÆ, a great vein which carries the blood from the abdominal viſcera into the ſubſtance of the liver. The trunk of this vein, about the fiſſure of the liver in which it is ſituated, is *divided* into the hepatic and abdominal portions. The *abdominal portion* is compoſed of *ſplenic*, *meſeraic*, and *internal hæmorrhoidal veins*. Theſe three venous branches carry all the blood from the ſtomach, ſpleen, pancreas, omentum, meſentery, gall-bladder, and the ſmall and large inteſtines, into the *ſinus* of the vena portæ. The *hepatic portion* of the vena portæ enters the ſubſtance of the liver, divides into innumerable ramifications, which ſecrete the bile, and the ſuperfluous blood paſſes into correſponding branches of the *venæ cavæ hepaticæ*.

THE ACTION OF THE VEINS.

Veins do not pulſate; the blood which they receive from the arteries flows through them very ſlowly, and is conveyed to the right auricle of the heart, by the contractility of their coats, the preſſure of the blood from the arteries, called the *vis a tergo*, the contraction of the muſcles, and reſpiration;

tion; and it is prevented from going backwards in the vein by the valves, of which there are a great number.

OF THE ABSORBENTS.

Absorbents are very thin and pellucid veſſels, which carry the lymph from every part of the body; ſubſtances applied to the ſurface of the body, and the chyle from the inteſtines; into the thoracic duct. **Division**, into *lacteals* and *lymphatics*. They are called *lacteals* in the inteſtines and meſentery, and *lymphatics* in every other part. **Figure**, branching, becoming broader as they proceed towards their termination. **Valves**, numerous, giving them a knotted appearance. **Situation.** It is ſuppoſed that they exiſt in every part of the body, although they have not been as yet detected in ſome, as the brain, &c. **Origin.** The cellular membrane, the viſcera, the excretory ducts of the viſcera, the external ſurface, and every part of the body. **Termination**, in the thoracic duct, or ſubclavian veins. **Lymphatic or conglobate glands** are ſituated every where in the courſe of the lymphatics. **Substance.** They conſiſt of tender, pellucid, ſtrong tunics. The **use** *of the abſorbents* is to carry back the lymph from different parts; to convey the chyle from the inteſtines to the thoracic duct, where they become mixed and diluted; and to abſorb ſubſtances from ſurfaces and parts on which they originate.

ABSORBENTS OF THE HEAD AND NECK.

Abſorbents are found on the ſcalp and about the viſcera of the neck, which unite into a conſiderable *branch* that accompanies the jugular vein. Abſorbents have not been detected in the human brain; yet there can be no doubt of there being ſuch veſſels: it is probable that they paſs out of the cranium through the canalis caroticus and foramen lacerum in baſi cranii, on each ſide, and join the above *jugular branch*, which paſſes through ſome glands as it proceeds into the cheſt to the angle of the ſubclavian and jugular vein.

ABSORBENTS OF THE UPPER EXTREMITIES.

The abſorbents of the upper extremities are divided into ſuperficial and deep-ſeated. The *ſuperficial abſorbents* aſcend under the ſkin in every direction to the wriſt, from whence a *branch* proceeds upon the poſterior ſurface of the fore-arm to the head of the radius, over the internal condyle of the humerus, up to the axilla, receiving ſeveral branches as it proceeds. Another *branch* proceeds from the wriſt along the anterior part of the fore-arm, and forms a *net-work* with a *branch* coming over the ulna from the poſterior part, and aſcends on the inſide of the humerus to the glands of the axilla.

The *deep-ſeated abſorbents* accompany the larger blood-veſſels, and paſs through two glands about the middle of the humerus, and aſcend to the glands of the axilla. The ſuperficial and deep-ſeated abſorbents having paſſed through the axillary glands, form *two trunks*, which unite into *one*, to be inſerted with the jugular abſorbents into the thoracic duct, at the angle formed by the union of the ſubclavian with the jugular vein.

ABSORBENTS OF THE INFERIOR EXTREMITIES.

These are alſo ſuperficial and deep-ſeated. The *ſuperficial ones* lie between the ſkin and muſcles. Thoſe of the toes and foot form a *branch* which aſcends upon the back of the foot over the tendon of the cruræus anticus, forms with other branches *a plexus* above the ankles, then proceeds along the tibia over the knee, ſometimes paſſes through a gland, and proceeds up the inſide of the thigh to the ſubinguinal glands.

The *deep-ſeated* abſorbents follow the courſe of the arteries, and accompany the femoral artery, in which courſe they paſs through ſome glands in the leg and above the knee, and then proceed to ſome deep-ſeated ſubinguinal glands.

The abſorbents from about the external parts of the pubis, as the penis, perineum, and from the external parts of the pelvis, in general proceed to the inguinal glands. The ſubinguinal and inguinal glands ſend forth ſeveral branches, which paſs through the abdominal ring into the cavity of the abdomen.

ABSORBENTS OF THE ABDOMINAL AND THORACIC VISCERA.

The abſorbents of the lower extremities accompany the external iliac artery, where they are joined by many branches from the *uterus*, *urinary bladder*, *ſpermatic chord*, and ſome branches accompanying the internal iliac artery: they then aſcend to the ſacrum, where they form a *plexus*, which proceeds over the pſoas muſcles, and meeting with the lacteals of the meſentery form the thoracic duct, or trunk of the abſorbents, which is of a ſerpentine form, about the ſize of a crow-quill, and runs up the dorſal vertebræ, through the poſterior opening of the diaphragm, between the aorta and vena azygos, to the angle formed by the union of the ſubclavian and jugular veins. In this courſe it receives

The abſorbents of the kidneys, which are ſuperficial and deep-ſeated, and unite as they proceed towards the thoracic duct.

The abſorbents of the ſpleen, which are upon its peritoneal coat, and unite with thoſe of the pancreas.

A branch from a plexus of veſſels paſſing above and below the duodenum, and formed by the abſorbents of the *ſtomach*, which come from the leſſer and greater curvature, and are united about the pylorus with thoſe of the pancreas and *liver*, which converge from the external ſurface and internal parts towards the portæ of the liver, and alſo by ſeveral branches from the *gall-bladder*.

PHYSIOLOGY OF ABSORPTION.

Abſorption is the taking up of ſubſtances which are applied to the mouths of abſorbing veſſels; thus the chyle is abſorbed from the inteſtinal tube by the lacteals, the vapour of circumſcribed cavities, and of the cells of the cellular membrane by the lymphatics of thoſe parts; and thus mercury and other ſubſtances are taken into the ſyſtem, when rubbed on the ſkin.

The principle by which this abſorption takes place is a power inherent in the mouths of abſorbing veſſels, a vis inſita, dependent on the high degree of irritability of their internal membrane by which the veſſels contract and propel the fluid forwards. Hence the uſe of this function appears to be of the utmoſt importance, viz. to ſupply the blood with chyle; to remove the ſuperfluous vapour of circumſcribed cavities, otherwiſe dropſies, as hydrocephalus, hydrothorax, hydrocordis, aſcites, hydrocele, &c. would conſtantly be taking place; to remove the ſuperfluous vapour from the cells of the cellular membrane diſperſed throughout every part of the body, that anaſarca may not take place; to remove the hard and ſoft parts of the body; and to convey into the ſyſtem medicines which are applied to the ſurface of the body.

SANGUIFICATION.

Sanguification appears to be nothing more than the mixing, by the action of the blood-veſſels, of the chyle with the blood; for as it paſſes from the ſubclavian vein, it changes its colour, and when it has reached the heart, cannot be diſtinguiſhed from the maſs of circulating blood.

NEUROLOGY,

OR

DOCTRINE OF THE NERVES.

Nerves are long whitiſh cords, compoſed of bundles or faſciculi of fibres, which ſerve for ſenſation. **Origin.** The cerebrum, cerebellum, medulla oblongata, and medulla ſpinalis. **Termination.** The organs of ſenſe; viſcera; veſſels; muſcles; bones, &c. **Figure**, branched. **Divided** into trunks, branches, ramuli, capillary fibres, papillæ, nervous plexuſes, and ganglions, or knots. **Substance**, pulpy. **Division**, into cerebral and ſpinal. *Number*, thirty-nine pair; nine pair of cerebral nerves, and thirty pair of ſpinal. *The* *nine pair of cerebral nerves* are, 1. The olfactory. 2. The optic. 3. Oculorum motorii. 4. The pathetic, or trochleatores. 5. The trigemini, or diviſi. 6. The abducent. 7. The auditory and facial. 8. The par vagum, or great ſympathetic nerves. 9. The lingual pair. *The thirty pair of ſpinal nerves* are divided into eight pair of cervical, twelve pair of dorſal, five pair of lumbar, and five pair of ſacral nerves. USE, for ſenſation in ſenſible parts, for the five external ſenſes, as touch, ſight, hearing, ſmelling, and taſte; and for the motion of muſcles.

OF THE NERVES OF THE BRAIN.

THE FIRST PAIR, or *Olfactory nerves*, ariſe from the corpora ſtriata, paſs forwards over the ſphænoid and frontal bones, one to each ſide of the criſta galli, where they ſend off a number of branches, which go through the cribriform foramina of the ethmoid bone, to be diſtributed on the pituitary membrane of the noſe. USE, for ſmelling.

THE SECOND PAIR, or *Optic nerves*, ariſe from the thalami nervorum opticorum, decuſſate each other, then paſs through the foramina optica, and perforate the bulb of the eye, and in it form the *retina*, which is the organ of viſion.

The third pair, or *Oculorum motorii*, ariſe from the crura cerebri, near the pons Varolii, paſs forwards towards the top of the petrous portion of the temporal bone, where they perforate the dura mater, and proceed to the orbital fiſſure, to be inſerted into the muſcles of the bulb of the eye, which they move.

The fourth pair, or *The Pathetic nerves*, ariſe from the crura of the cerebellum laterally, paſs forward, and pierce the dura mater below the third pair, and proceed with them through the orbital fiſſure, to be inſerted into the trochlearis muſcle of the eye.

The fifth pair, or *Trigemini*, ariſe from the anterior part of the crura of the cerebellum, and are divided within the cavity of the cranium into three branches, viz. the ophthalmic or orbital, and the ſuperior and inferior maxillary.

The *orbital* nerve gives off a *branch*, near its origin, which unites with a branch of the ſixth pair, to form the great intercoſtal nerve: it then divides into three branches, the *frontal*, which goes through the ſuperciliary foramen to the muſcles and integuments of the forehead; the *lachrymal*, which goes to the lachrymal gland; and the *naſal*, which goes forwards to the inner canthus of the eye, where it gives off a branch or two, then returns into the cranium, and paſſes through the cribriform plate of the ethmoid bone, and is diſtributed on the pituitary membrane.

The *ſuperior maxillary* nerve goes through the foramen rotundum, is divided into, 1ſt. the *ſphæno-palatine*, which goes through the ſphæno-palatine foramen, ſends twigs to the internal pterygoid muſcle, then enters the cavity of the noſtrils, and is loſt on the Euſtachian tube, ſoft palate, and pituitary ſinus of the ſphænoid bone; 2d. the *poſterior alveolar* branch, which deſcends through the foramen by the laſt grinder, and is diſtributed to the molares: 3d. the *infra-orbital* nerve, which goes through the infra-orbital foramen, and is diſtributed on the muſcles of the cheek, noſe, lips, and communicates with the facial nerve.

The *inferior maxillary* goes out of the cranium, through the foramen ovale, giving branches to the muſcles and glands in its courſe, and to the facial nerve, and divides as it paſſes over the pterygoid muſcle, into, 1ſt. the *internal lingual*, which is connected with the chorda tympani, and ſupplies the ſublingual glands and contiguous muſcles, but more eſpecially the tongue: 2d. the more proper *inferior maxillary*, which goes into the canalis mentalis of the lower jaw, and gives a branch to each tooth, and comes out again, to ſupply the lower lip and chin.

THE SIXTH PAIR, or *Abducent nerves*, ariſe from the poſterior part of the pons Varolii, proceed forwards,

wards, perforate the dura mater, and ſend off ſome branches near the ſella turcica, which unite with branches of the ophthalmic nerve of the fifth pair, to form the great intercoſtal nerve; they then accompany the third and fourth pair through the orbital fiſſure, and are diſtributed on the recti externi muſcles of the bulb of the eye.

The seventh pair, or *Auditory nerves*, as they are commonly called, originate on each ſide by two branches, the *portio dura* and *portio mollis.* The portio dura is, in fact, a nerve of the face, and is therefore, with more propriety, called the *Facial nerve:* it ariſes from the fourth ventricle of the brain, paſſes through the petrous portion of the temporal bone, where it gives off the *chorda tympani*, proceeds through the ſtylo-maſtoid foramen, perforates the parotid gland, and then divides into ſeven or eight branches, which conſtitute the *pes anſerinus*, and ſupply the ear, parotid gland, and muſcles of the face, and communicate with the branches of the fifth pair on the face.

The *portio mollis* ariſes from the medulla oblongata and the fourth ventricle, enters the internal auditory paſſage, and is diſtributed by innumerable branches on the membrane of the cochlea, veſtibulum, forming the immediate organ of hearing.

The eighth pair, or *Par vagum*, ariſe by ſeveral branches, partly from the medulla oblongata and partly from the fourth ventricle behind the pons Varolii. It is connected at its origin with the *acceſſory nerves of Willis*, which aſcend through the great occipital foramen from the fifth cervical nerve: theſe nerves proceed together through the foramen lacerum in baſi cranii. The acceſſory nerves then ſeparate from the par vagum, and vaniſh in the ſterno-clido maſtoideus and cucullaris muſcles: the par vagum then gives off branches in the neck to the tongue, larynx, and thyroid gland, from which parts they acquire names, and then deſcends into the cavity of the thorax, where it gives off,

1ſt. The *right* and *left recurrent*; the former ariſes on the right ſide, near the ſubclavian artery, which it ſurrounds, and then returns upwards to the thyroid gland: the latter ariſes under the arch of the aorta, which it ſurrounds, and then aſcends to the œſophagus. Both nerves are loſt in the muſcles of the larynx and pharynx.

2dly. *Several branches* which proceed to the ſuperior part of the pericardium, to form with other nerves the *cardiac plexus*, which ſends branches to the heart.

3dly. The par vagum then extends on the poſterior ſurface of the lungs, on each ſide, and gives off ſome *branches*, which, with others from the cardiac plexus and recurrent nerves, form a *right* and *left pulmonic plexus*, which ſupplies the lungs and trachea.

4thly. Both trunks of the par vagum then deſcend with the œſophagus, and give off many *ramifications*, which form the *œſophageal plexus*, from which the œſophagus and adjoining parts are ſupplied.

5thly. Having paſſed the diaphragm with the œſophagus, they form, about the cardia, two *ſtomachic plexuſes*; the anterior is expanded over the anterior ſurface of the ſtomach and its greater curvature; the poſterior over the poſterior ſurface and leſſer curvature, and it tranſmits alſo branches to the liver, pancreas, and diaphragm.

6thly. The par vagum alſo ſends ſome *branches* to unite with the great intercoſtal, and thus concurs in forming the *hepatic*, *ſplenic*, and *renal plexuſes*.

THE NINTH, or *Lingual pair* of nerves, ariſe from the medulla oblongata, between the corpora olivaria and pyramidalia, paſs out of the ſkull through the foramina condyloidea anteriora, and communicate with the par vagum and firſt pair of cervical nerves: they then proceed forwards between the jugular vein and carotid artery, to be diſtributed on the muſcles of the tongue and os hyoides.

Thus it appears that the olfactory, ophthalmic, and oculorum motorii ariſe from the cerebrum; the trochleatores and trigemini from the cerebellum; and the auditory, par vagum, and linguales, from the medulla oblongata.

OF THE NERVES OF THE MEDULLA SPINALIS.

Thoſe nerves are called SPINAL which paſs out through the lateral or intervertebral foramina of the ſpine.

They are divided into *cervical*, *dorſal*, *lumbar*, and *ſacral* nerves.

CERVICAL NERVES.

The CERVICAL nerves are *eight* pairs. The *firſt* are called the *occipital;* they ariſe from the beginning of the ſpinal marrow, paſs out between the margin of the occipital foramen and atlas, form a ganglion on its tranſverſe proceſs, and are diſtributed about the occiput and neck.

The *ſecond* pair of cervical nerves ſend a branch to the acceſſory nerve of Willis, and proceed to the parotid gland and external ear.

The *third* cervical pair ſupply the integuments of the ſcapula, cucullaris, and triangularis muſcles, and ſend a branch to the diaphragmatic nerve.

The *fourth*, fifth, ſixth, *ſeventh*, and *eighth* pair all converge to form the *brachial plexus*, from which ariſe the ſix following

NERVES OF THE UPPER EXTREMITIES.

1. THE AXILLARY nerve, which ſometimes ariſes from the radial nerve. It runs backwards

and outwards around the neck of the humerus, and ramifies in the muſcles of the ſcapula.

2. THE EXTERNAL CUTANEAL, which perforates the coraco-brachialis muſcle, to the bend of the arm, where it accompanies the median vein as far as the thumb, and it is loſt in its integuments.

3. THE INTERNAL CUTANEAL, which deſcends on the inſide of the arm, where it bifurcates. From the bend of the arm, the anterior branch accompanies the baſilic vein, to be inſerted into the ſkin of the palm of the hand; the poſterior branch runs down the internal part of the fore-arm, to vaniſh in the ſkin of the little finger.

4. THE MEDIAN nerve, which accompanies the brachial artery to the cubit, then paſſes between the brachialis internus, pronator rotundus, and the perforatus and perforans, under the ligament of the wriſt to the palm of the hand, where it ſends off branches, in every direction, to the muſcles of the hand, and then ſupplies the digital nerves, which go to the extremities of the thumb, fore and middle fingers.

5. THE ULNAR nerve, which deſcends between the brachial artery and baſilic vein, between the internal condyle of the humerus, and the olecranon, and divides in the fore-arm into an *internal* and an *external* branch. The former paſſes over the ligament of the wriſt and ſeſamoid bone, to

the hand, where it divides into three branches, two of which go to the ring and little finger, and the third forms an arch towards the thumb in the palm of the hand, and is loſt in the contiguous muſcles. The latter paſſes over the tendon of the extenſor carpi ulnaris and back of the hand, to ſupply alſo the two laſt fingers.

6. THE RADIAL nerve, which ſometimes gives off the axillary nerve. It paſſes backwards, about the os humeri, deſcends on the outſide of the arm between the brachialis externus and internus muſcles to the cubit; then proceeds between the ſupinator longus and brevis to the ſuperior extremity of the radius, giving off various branches to adjacent muſcles. At this place it divides into two branches: *one* goes along the radius, between the ſupinator longus and radialis internus to the back of the hand, and terminates in the interoſſeous muſcles, the thumb and three firſt fingers:—the *other* paſſes between the ſupinator brevis and head of the radius, and is loſt in the muſcles of the fore-arm.

DORSAL NERVES.

THE DORSAL nerves are twelve pairs in number. The *firſt* pair gives off a branch to the brachial plexus. All the dorſal nerves are diſtributed to the muſcles of the back, intercoſtals, ſerrati, pectoral, abdominal muſcles and diaphragm. The five inferior pairs go to the cartilages of the ribs, and are called *coſtal.*

LUMBAR NERVES.

The five pair of LUMBAR nerves are beſtowed about the loins and muſcles, and ſkin of the abdomen and loins, ſcrotum, ovaria, and diaphragm. The ſecond, third, and fifth pair unite and form the *obturator nerve*, which deſcends over the pſoas muſcle into the pelvis, and paſſes through the foramen thyroideum to the obturator muſcle, triceps, pectineus, &c.

The third and fourth, with ſome branches of the ſecond pair, form the *crural nerve*, which paſſes under Poupart's ligament with the femoral artery, ſends off branches to the adjacent parts, and deſcends in the direction of the ſartorius muſcle to the internal condyle of the femur, from whence it accompanies the ſaphena vein to the internal ankle, to be loſt in the ſkin of the great toe.

The fifth pair are joined to the firſt pair of the ſacral nerves.

SACRAL NERVES.

There are five pair of SACRAL nerves, all of which ariſe from the cauda equina, or termination of the medulla ſpinalis; ſo called from the nerves reſembling the tail of a horſe. The four firſt pair give off branches to the pelvic viſcera, and are afterwards united to the laſt lumbar, to form a large *plexus*, which gives off the *iſchiatic nerve*, the largeſt in the body. The iſchiatic nerve immediately at its origin ſends off branches to the bladder, rectum, and parts of generation; proceeds from the cavity of the pelvis through the iſchiatic notch, between the tuberoſity of the iſchium and great trochanter, to the ham, where it is called the *popliteal nerve*. In the ham it divides into two branches. 1. The *peroneal*, which deſcends on the fibula, and diſtributes many branches to the muſcles of the leg and back of the foot. 2. The *tibial*, which penetrates the gaſtrocnemii muſcles to the internal ankle, paſſes through a notch in the os calcis to the ſole of the foot, where it divides into an *internal* and *external plantar* nerve, which ſupply the muſcles and aponeuroſis of the foot and the toes.

OF THE GREAT INTERCOSTAL OR SYMPATHETIC NERVES.

The great intercoſtal nerve ariſes in the cavity of the cranium from the union of a branch of the ſixth with a recurrent branch of the fifth pair, called the *Viduan nerve*. It paſſes out of the cranium through the carotid canal, and deſcends on the ſides of the cervical, dorſal, and lumbar vertebræ and ſacrum, in which courſe it is joined by filaments from all the ſpinal nerves, forming ſmall ganglions at their junctions.

In the neck it forms only three *cervical ganglions*, from which ariſe the *cardiac nerves* and *pulmonic plexuſes*, which ſend nerves to the heart and lungs. In the thorax there ariſe five branches from the third, fifth, ſeventh, eighth, and ninth ganglions, which deſcend in the courſe of the vertebræ, and paſs through the diaphragm, where they unite on each ſide into one trunk, the *ſplanchnic* or *anterior intercoſtal nerve*, which ſoon unite together, and form the GREAT SEMILUNAR GANGLION, from which nerves are given off to all the abdominal viſcera, forming ten plexuſes, which communicate with one another, and are named after the adjacent viſcera, viz. the *cœliac plexus*, ſituated near the cœliac artery, and ſupplying the ſtomach; the *ſplenic*, near the ſpleen; the *hepatic*, near the portæ of the liver; the *ſuperior*, *middle*, and *inferior* meſenteric plexus; two *renal* and two *ſpermatic* plexuſes.

PHYSIOLOGY OF THE FUNCTIONS OF THE NERVOUS SYSTEM.

Nerves are the organs of our ſenſes. Bodies applied to certain parts of our ſyſtem produce changes in thoſe parts, which changes are conveyed in an unknown manner to the brain by means of the nerves only, and SENSATION is produced; ſo that ſenſation is a property peculiar to the nervous fibre, as irritability is to the muſcular fibre: and hence all ſentient parts are ſupplied with nerves, although they cannot be detected by the eye.

The ſenſes are diſtinguiſhed into internal and external.

THE INTERNAL SENSES are ideas which the ſenſorium commune, or mind, forms to itſelf, and may be produced from the external ſenſes, or they may be excited ſpontaneouſly; ſuch are, *memory*, *imagination*, *conſcience*, *the paſſions of the mind*, and *reaſoning*, by the ſuperior excellence of which, man differs ſo eminently from the brute.

THE EXTERNAL SENSES are, ſmelling, ſeeing, hearing, taſting, and touching.

OF SMELLING.

Smelling is a ſenſation by which we perceive the ſmell of ſubſtances. The *organ* of ſmell is the nervous papillæ of the olfactory or firſt pair of nerves, which are diſtributed on every part of the pituitary membrane of the noſe.

OF SEEING.

Seeing is a ſenſation by which we perceive bodies around us, and their viſible qualities. The *organ* of ſight is the retina, an expanſion of the optic or ſecond pair of nerves. The *object* of ſight is the rays of light which penetrate the bulb of the eye and ſtimulate the retina. *Light* is a ſubtile and ſolid material, which emanates from the ſun or any lucid body with a very rapid motion, in right lines, which are called *rays of light*, and penetrate to the retina in the following manner: the rays of light fall on the pellucid and convex cornea of the eye, by whoſe denſity and convexity they are united into a focus, which paſſes the aqueous humour and pupil of the eye, to be more condenſed by the cryſtalline lens. The rays of light thus concentrated, penetrate the vitreous humour, to ſtimulate the retina, upon which they impreſs the image of external objects to be repreſented to the mind through the medium of the optic nerves.

OF HEARING.

Hearing is a ſenſation by which we perceive the ſound of any ſonorous body.

Sound is a tremulous motion of the air excited by ſtriking any ſonorous body. Sound is conveyed to an enormous diſtance in the atmoſphere, in ſtraight lines, which are called ſonorous rays. Soft bodies diminiſh or ſtifle ſound; elaſtic ones increaſe it. The *organ* of hearing is the portio mollis of the ſeventh pair of nerves, whoſe pulp is beautifully diſtributed in the veſtibulum, ſemicircular canals, and cochlea of the ear. Hearing is *performed* in the following manner: the rays of ſound emanating from a ſonorous body arrive at the ear, which, by its elaſticity and peculiar formation, concentrates them, that they may paſs along the external auditory foramen to the membrana tympani, which they cauſe to vibrate. The trembling tympanum communicates its vibrations to the malleus, which is in contact with it: the malleus conveys them to the incus, the incus to the os orbiculare, and the os orbiculare to the ſtapes. The ſtapes adhering to the feneſtra ovalis cauſes it to vibrate. The trembling feneſtra ovalis communicates its vibrations to the water contained in the veſtibulum and ſemicircular canals, and cauſes very gentle motions of the nervous expanſion contained therein, which tranſmit them to the ſenſorium commune, where the mind is informed of the preſence of ſound, and judges of its difference. Gravity and acuteneſs of ſound depend upon the number of vibrations given at the ſame time.

OF TASTING.

Taſting is a ſenſation by which we diſtinguiſh the qualities of bitter, ſweet, ſour, &c. ſubſtances. The nervous papillæ of the ninth or lingual pair of nerves, which are ſituated in the apex and margins of the tongue, are the chief *organs* of taſte. The parts ſubſervient to taſte are—The *tongue*, which gives a convenient ſituation to the nervous papillæ, and by its extenſive motion applies them to the ſubſtance to be taſted—The *epidermis* of the tongue, which moderates any exceſſive ſtimuli—The *ſaliva* and *mucus* of the mouth, which aſſiſt the organ of taſte when it is neceſſary that the ſubſtances ſhould be diſſolved in order to be taſted, and which alſo keep the nervous papillæ moiſt.

OF TOUCHING.

Touching is a ſenſation by which we diſtinguiſh the qualities of hardneſs, ſoftneſs, heat and cold, &c. of ſubſtances, and by which we perceive any ſubſtance that comes in contact with the ſkin, particularly at the points of the fingers. The *organs* of touch are the nervous papillæ of the ſkin, which are extremely numerous and ſenſible at the points of the fingers.

Too great a ſenſation is moderated by the epidermis, which alſo defends the papillæ from being dried by the air.

ADENOLOGY,

OR

DOCTRINE OF THE GLANDS.

A **GLAND** is a ſmall round body, which ſerves for the ſecretion or alteration of a fluid. **DIVISION**, into folliculoſe, globate, glomerate, and conglomerate; they are alſo divided from the liquid they ſecrete or change, into ſebaceous, muciparous, lymphatic, lachrymal, ſalival, bilious, lacteal, &c.

A *folliculoſe gland* conſiſts of an hollow vaſcular membrane, having an excretory duct; as the muciparous and ſebaceous glands.

A *globate gland* conſiſts of a glomer of lymphatic veſſels, connected together by cellular membrane, and has no cavity nor excretory duct, as the lymphatic glands of the lymphatic veſſels.

A *glomerate gland* is formed of a glomer of ſanguineous veſſels; has no cavity, but is furniſhed with an excretory duct, as the lachrymal and mammary glands.

A *conglomerate gland* is a gland compoſed of many glomerate glands, whoſe excretory ducts unite, and form one large canal, or duct. The pancreas and ſalival glands belong to this claſs.

The *excretory duct* of glands is a thin canal, which goes out of the gland, and excerns the ſecreted fluid, by the contractility of its coats.

The *nerves* and *veſſels* of glands are numerous, and come from the neighbouring parts.

Glands are connected with other parts by cellular membrane. They are larger in infants than in adults. USE, to ſecrete or change a fluid.

GLANDS OF THE SKIN. The *ſubcutaneous glands* are ſebaceous, and ſituated under the inferior ſurface of the ſkin, which they perforate by their excretory ducts.

GLANDS IN THE CAVITY OF THE CRANIUM. 1. *Glands of the dura mater*, called alſo, after their diſcoverer, *Bacchonian*, are ſituated near the ſuperior longitudinal ſinus of the dura mater, in peculiar foveolæ of the os frontis and parietal bones. They appear to be globate. 2. *Glands of the choroid plexus* are globate, and ſituated in the choroid plexus of the lateral ventricles of the brain. 3. The *pituitary gland*, ſituated in a duplicature of the dura mater, in the ſella turcica of the ſphænoid bone. The infundibulum of the brain terminates in this gland.

GLANDS OF THE EYES. 1. *Meibomius's glands.* Theſe are ſmall and numerous ſebaceous glands, ſituated under the ſkin of the eyelids, near their margins. Their excretory ducts open on the margins of the tarſi, and are called *puncta ciliaria.* 2. The *lachrymal gland*, which is glomerate, and ſituated above the external angle of the orbit, in a peculiar depreſſion of the os frontis. This gland has ſix or eight excretory canals, through which the tears are conveyed, and which open upon the internal ſurface of the upper eyelids. 3. The *caruncula lachrymalis*, a ſmall and red prominence, obvious in the internal angle of the eye, between the tarſi of the eyelids. It conſiſts of ſmall ſebaceous glands, which ſecrete a fæculent humour.

GLANDS OF THE NOSTRILS. The pituitary membrane lining the noſtrils and its ſinuſes, is every where furniſhed with *muciparous glands*, which ſecrete the mucus of the noſe.

GLANDS OF THE EAR. The *ceruminous glands* are ſituated under the ſkin of the meatus auditorius externus, and ſecrete the wax of the ears.

GLANDS OF THE MOUTH. The glands of the mouth, which ſecrete the ſaliva, are called *ſalival*, and are, 1. The *parotid*, two large conglomerate glands, ſituated under the ear between the mamillary proceſs of the temporal bones and angle of the lower jaw. The excretory canal of this gland opens in the mouth, and is called, from its diſcoverer, the *Stenonian* duct. 2. The *maxillary*, which are conglomerate glands, ſituated under the angles of the lower jaw. The excretory ducts of theſe glands are alſo called, after their diſcoverer, *Warthonian.* 3. The *ſublingual glands*, ſituated under the tongue. 4. The *glands of the cheek*, ſituated on the internal ſurface of the cheeks. 5. The *labial glands*, on the internal ſurface of the lips, under the common membrane of the mouth. 6. The *molar glands*, ſituated on each ſide of the mouth, between the maſſeter and buccinator muſcles, and whoſe excretory ducts open near the laſt dens molaris.

EXTERNAL GLANDS OF THE NECK. 1. The *jugular glands*, which are globate, and found under the ſkin of the neck about the external jugular veins: they are in general about 20 in number. 2. The *ſubmaxillary glands*, alſo globate, and ſituated in the fat under the jaw. 3. The *cervical*, found under the cutis in the fat about the neck. 4. The *thyroid*, a large gland lying upon the cricoid cartilage, trachea, and horns of the thyroid cartilage. It is uncertain whether it be globate or conglomerate. Its excretory duct has never been detected, and its uſe is unknown.

GLANDS OF THE FAUCES. The glands ſituated under the membrane which lines this cavity, are muciparous, and divided, from their ſituation, into *palatine*, *uvular*, *tonſil*, *lingual*, *laryngeal*, and *pharyngeal.*

GLANDS OF THE BREASTS. The *mammary*, or *lacteal glands*, are ſituated under the fat of the breaſts. Their excretory ducts are called *tubuli lactiferi*, *tabuli galactoferi*, and run from them to the nipple, in which they open.

GLANDS OF THE THORAX. 1. The *thymus*, a large gland, peculiar to the fœtus, and which diſappears ſoon after birth: it is ſituated in the anterior duplicature or ſpace of the mediaſtinum, under the ſuperior part of the ſternum, and above the pericardium. An excretory duct has not been as yet detected, but lymphatics are ſeen going from this gland to the thoracic duct. 2. The *bronchial*, which are large blackiſh glands near the end of the trachea, and beginning of the bronchia, and which ſecrete a blackiſh mucus. 3. The *œſophageal glands*, found under the internal membrane of the œſophagus, and which ſecrete the mucus of that canal. 4. The *dorſal glands*, ſituated upon the 4th or 5th vertebra of the back, between them and the poſterior ſurface of the œſophagus. They have no excretory ducts.

GLANDS OF THE ABDOMEN. 1. The *gaſtric glands*, which are muciparous, and ſituated under the external membrane of the ſtomach. 2. The *inteſtinal glands*, which are alſo muciparous, and found under the internal membrane of the inteſtines, eſpecially the large. 3. The *meſenteric glands*, ſituated here and there in the cellular membrane of the meſentery. The chyle from the inteſtines paſſes through theſe glands to the thoracic duct. 4. The *hepatic glands*, alſo called *acini bilioſi*, which form the ſubſtance of the liver, and ſeparate the bile into ſmall ducts, which, at length, terminate in the *ductus hepaticus.* 5. The *cyſtic glands*, which are muciparous, and found under the internal membrane of the gall-bladder, eſpecially about its neck. 6. The *pancreatic glands*, which conſtitute the pancreas; a ſmall duct ariſes from each gland, which unite to form the *ductus pancreaticus.* See SPLANCHNOLOGY. 7. The *epiploic*, or *omental glands*, which are globate, and ſituated in the omentum.

GLANDS OF THE LOINS. 1. The *ſupra-renal glands*, ſituated in the adipoſe membrane, one above each kidney. An excretory duct has never been detected, and their uſe is unknown. 2. The *kidneys.* See SPLANCHNOLOGY. 3. The *lumbar glands*, which are globate, and ſituated about the beginning of the thoracic duct. 4. The *iliac glands*, found about the beginning of the iliac veſſels. 5. The *ſacral*, which are globate glands, and adhere to the os ſacrum.

GLANDS OF THE ORGANS OF GENERATION OF MAN. 1. The *odoriferous glands* of the glans penis, which are ſebaceous, and ſituated around the *corona glandis.* 2. The *mucous glands of the urethra*, ſituated under the internal membrane of the urethra.

thra. The mouths of their excretory ducts are called *lacunæ.* 3. *Cowper's glands* (ſo called from their inventor) are three large muciparous glands, two of which are ſituated before the proſtate gland under the acceleratores urinæ, and the third more forward before the bulb of the urethra. 4. The *proſtate*, a very large, heart-like, firm gland, ſituated between the neck of the urinary bladder and bulbous part of the urethra. It ſecretes a lacteal fluid, which is emitted into the urethra by ten or twelve ducts near the verumontanum, during coition.

GLANDS OF THE FEMALE ORGANS OF GENERATION. 1. The *odoriferous glands of the labia majora and nymphæ*, which are ſebaceous, and ſituated under the ſkin of thoſe parts. 2. The *odoriferous glands of the clitoris*, which are numerous, ſituated about the baſis of the clitoris, and are of the ſame nature as the former. 3. The *mucous glands of the urethra*, ſituated under the internal membrane of the female urethra. 4. The *mucous glands of the vagina*, ſituated under the internal membrane of the vagina.

GLANDS OF THE EXTREMITIES. The *glands in the groin*, or *inguinal glands*, are globate, or lymphatic, are ſituated in great numbers in the cellular membrane of the inguinal region, and receive the lymphatic veſſels from the glans penis, and lower extremities. The *ſubaxillary glands* are alſo globate, and are ſituated in the cellular membrane of the arm-pit: they are alſo numerous, and receive the lymphatic veſſels from the breaſts and ſuperior extremities.

Glands of the joints. The ſmall fat-like maſſes, ſituated within the moveable joints, are erroneouſly called *ſynovial glands*: their ſtructure is not glandular, they are compoſed of adeps and an arrangement of the internal vaſcular membrane of the joint, which gives them a fimbriated appearance. By theſe little maſſes the ſynovia is ſeparated from the blood for the eaſy motion of the joint.

PHYSIOLOGY OF SECRETION.

Secretion is a particular function in an animal body, by which a fluid is ſeparated from the blood, different in its properties from the blood.

The *organs* which ſecrete the various humours are the glands. The *proximate* or *immediate cauſe* of ſecretion is a ſpecific action of the arteries of the glands; for every ſecretion is formed from the extremities of arteries (the ſecretion of the bile is no exception to this law, for the vena portæ takes upon itſelf the function of an artery); thus the mucous glands ſecrete mucus, the ſalival glands ſaliva; the acini of the liver, bile; the penicelli of the kidnies, urine, &c.

The ſecreted fluids are the proper ſtimuli to the receptacles and ducts through which the ſecretion is to paſs to its place of deſtination; ſo that the ſecretions move along the excretory ducts by means of the contractility of the coats of the ducts and the aſſiſtance of neighbouring moving powers.

SPLANCHNOLOGY,

OR

DOCTRINE OF THE VISCERA.

Body, divided externally into head, trunk, and extremities. **Head**, divided into face, and hairy part. **Hairy part**, into vertex, or crown, ſinciput, or the fore part, occiput, or hinder part, and ſides. **Face**, into forehead, temples, noſe, eyes, mouth, cheeks, chin, and ears. **Trunk**, divided into neck, thorax, and abdomen. **Neck**, into anterior and poſterior part. **Thorax**, into anterior and poſterior part and ſides. **Abdomen**, into anterior, poſterior, and lateral regions. **Anterior region**, ſubdivided into three regions, 1. the *epigaſtric*, which lies over the ſtomach, and whoſe ſides are termed the *hypochondriac regions*; 2. the *umbilical*, ſurrounding the navel, and whoſe ſides are called the *flanks*; 3. the *hypogaſtric*, which lies over the urinary bladder, and whoſe ſides are called *groins*. The **pubes** is the hairy part under the abdomen, between the groins. Under the pubes are the parts of generation—in men, the ſcrotum and penis—in women, the labia and rima vulvæ. The ſpace between the genitals and anus is called the *perinæum.* **Extremities**, divided into ſuperior and inferior. **Superior extremity**, into top of the humerus, brachium, fore arm, and hand. **Hand**, into carpus, metacarpus, and fingers. **Fingers**, into pollex, index, digitus medius, digitus annularis, digitus auricularis. **Inferior extremity**, divided into femur, or thigh, crus, or leg, and extremity of the foot. **Foot**, into tarſus, metatarſus, and toes.

Internal division of the body, into three cavities, viz. cavity of the cranium, thorax, and abdomen.

COMMON INTEGUMENTS.

Theſe are ſo called, becauſe they are the common coverings as it were to the body; they conſiſt of epidermis, rete mucoſum, cutis, and membrana adipoſa.

EPIDERMIS, OR SCARF-SKIN.

A thin, pellucid, inſenſible membrane, covering the external ſurface of the body. **Connexion**, with the cutis, hairs, exhaling and inhaling veſſels. **Colour**, white. **Use**, to cover the ſenſible cutaneous papillæ.

RETE MUCOSUM.

A mucous ſubſtance, diſpoſed in a net-like form, between the epidermis and cutis. **Colour**, white in Europeans, black in Ethiopians, &c. &c. **Use**, to cover the ſenſible cutaneous papillæ, to connect the epidermis with the cutis, and give the colour to the body. **Synonims.** Mucus Malpighianus.

CUTIS, OR TRUE SKIN.

A thick membrane between the rete mucoſum and adipoſe membrane, covering the whole body. **Substance**, fibrous, vaſcular, and nervous. **Use**, for the ſituation of the organ of touch, exhalation, and abſorption. See pages 120 and 136.

PHYSIOLOGY OF PERSPIRATION.

Perſpiration is a ſpecies of ſecretion by which the blood is freed of a quantity of aqueous fluid by the exhalent arteries of the ſkin. It is divided into *inſenſible* and *ſenſible perſpiration:* the former is continually going on, by which means the ſurface of the body is kept ſmooth and moiſt, and may be detected by placing any part of the ſkin near a looking-glaſs, which will become ſoiled. The latter, commonly termed *ſweat*, is obſerved only occaſionally.

UNGUES, OR NAILS,

Are horny laminæ, ſituated in the extremities of the fingers and toes. Use, to defend the nervous papillæ from contuſion.

PILI, OR HAIRS.

Thin, elaſtic, dry filaments, growing out from the ſkin. Colour and situation, various. Called capilli on the head; ſupercilia, or eye-brows, above the eyes; cilia, or eyelaſhes, on the margin of the eyelids; vibriſſæ in the noſtrils; pili auriculares in the meatus auditorius; myſtax on the upper lip; barba on the lower jaw, &c. &c.

ADIPOSE AND CELLULAR MEMBRANE.

A membrane formed of ſmall membranous cells, which are ſometimes diſtended with fat. Situation, under the cutis, and in ſome ſoft parts. Use, to cover and defend the muſcles; to unite the ſoft parts; and to render the muſcular fibres flexile. When without fat, it is called *tela celluloſa*, or cellular membrane, which forms the ſubſtance of almoſt all the membranes, and connects various parts together.

OF THE HEAD.

The parts which form the head, are divided into external and internal. The *external parts* are the common integuments; hair; a tendinous expanſion; three pair of muſcles; pericranium; and cranium itſelf. The *internal parts* are, the dura mater; membrana arachnoidea; pia mater; cerebrum; cerebellum; medulla oblongata; nine pair of nerves; four arteries, and twenty-two venous ſinuſes.

DURA MATER.

A thick membrane, which ſtrongly adheres to the internal ſurface of the cranium, eſpecially about the ſutures. PROCESSES. The *falciform proceſs*, which divides the hemiſpheres of the brain; *tentorium cerebelli*, which ſeparates the brain from the cerebellum; and *ſeptum cerebelli*, which ſeparates the two lobes of the cerebellum. COMPOSED of two ſtrong membranous layers adhering together by fibrous texture. ARTERIES. Meningea anterior, media and poſterior. VEINS are called venous ſinuſes; in number they are twenty two, the principal of which are the *ſuperior longitudinal, lateral*, and *inferior longitudinal;* all of which evacuate their blood through the foramen lacerum in baſi cranii, into the internal jugular veins. NERVES, none. GLANDS, ſituated about the longitudinal ſinus, are called Bacchonian. USE, to form the internal perioſteum of the cranium, and to contain and defend the cerebrum and internal parts of the brain from compreſſion.

MEMBRANA ARACHNOIDEA.

A very delicate and tranſparent membrane, SITUATED between the dura and pia mater, ſurrounding the cerebrum, cerebellum, medulla oblongata, and medulla ſpinalis. **SUBSTANCE**, very thin and filamentous, and apparently without veſſels and nerves. **USE**, not known.

PIA MATER.

A thin membrane, firmly accreted to the convolutions of the cerebrum, cerebellum, medulla oblongata and ſpinalis. **SUBSTANCE**, almoſt wholly vaſcular. **USE**, to diſtribute the veſſels to, and contain the ſubſtance of, the cerebrum.

CEREBRUM, OR BRAIN.

A great viſcus in the cavity of the cranium. **FIGURE**, oval. **SIZE**, larger in man, in proportion to his ſize, than in any other animal. **SUBSTANCE**, cortical and medullary. **DIVIDED** into two *hemiſpheres*, right and left. Each hemiſphere ſubdivided on its inferior ſurface into three *lobes*, an anterior, middle, and poſterior. **PRINCIPAL CAVITIES**, two *anterior* or *lateral ventricles*, in each of which are ſeveral eminences and a looſe vaſcular production of the pia mater, called the *plexus choroides*; a *third* and *fourth ventricle*. **PRINCIPAL PARTS**; *corpus calloſum*, ſeen when the hemiſpheres are ſeparated from each other; *ſeptum pellucidum*, which divides the lateral ventricles; the *fornix;* the *digital proceſſes; pedes hippocampi; corpora ſtriata*, and *thalami nervorum opticorum*, which are found in the lateral ventricles; *valvula magna cerebri; commiſſura anterior* et *poſterior; corpora quadrigemina*, i. e. nates and teſtes; *glandula*

glandula pinealis; glandula pituitaria; eminentiæ candicantes, and the *crura cerebri*, all of which can only be learnt upon the ſubject. ARTERIES, branches of the internal carotids and vertebrals. NERVES, none, but emits nine pair. VEINS, return from the cortex of the cerebrum, and evacuate themſelves into twenty-two venous ſinuſes of the dura mater. USE. It is the organ of all the ſenſes.

CEREBELLUM, OR LITTLE BRAIN.

A ſmall brain ſituated under the tentorium in the inferior occipital depreſſion. FIGURE, round. DIVISION, into a right and left lobe. SUBSTANCE, externally *cortical*; internally *medullary*. EMINENCES, two *crura cerebelli*; an anterior and poſterior *vermiform proceſs*, and the *arbor vitæ*. CAVITIES, none. VESSELS, common with the cerebrum. USE, the ſame as the cerebrum.

MEDULLA OBLONGATA.

A medullary part lying upon the baſilary or cuneiform proceſs of the occipital bone, formed by the connexion of the crura of the cerebrum and cerebellum. EMINENCES, *pons Varolii; corpora pyramidalia*; and *corpora olivaria*. USE, the ſame as the cerebrum.

MEDULLA SPINALIS.

A continuation of the medulla oblongata, which deſcends into the ſpecus vertebralis, from the foramen magnum occipitale to the third vertebra of the loins, in which courſe it tranſmits between th vertebræ thirty pair of nerves. **FIGURE**, cylindrical. **TERMINATES** in various nerves, whic form the *cauda equina*. **INTEGUMENTS**, the du mater; tunica arachnoidea; and pia mater. **SU STANCE**, externally medullary; internally cortica **ARTERIES**, anterior ſpinal. **USE**, to emit thir pair of nerves, called ſpinal.

OF THE ACTION OF THE CEREBRUM, CER BELLUM, MEDULLA OBLONGATA, AND MEDULLA SPINALIS.

The moſt important functions of an anima body are thoſe of the brain. In order to explai theſe accurately, it is neceſſary to mention a fe experiments which have been made upon animals

Upon dividing, compreſſing, or tying a nerve the muſcles to which the nerve goes become paralytic. If the nerve thus divided, compreſſed or tied, had any particular ſenſation, that ſenſation no longer exiſts; but upon untying or removing the compreſſion, its peculiar ſenſe returns.

If the cerebrum, cerebellum, or medulla oblongata, be irritated, dreadful convulſions tak place all over the body.

If any part of the brain be compreſſed, th part of the body is deprived of motion which h nerves from the compreſſed part.

From theſe phenomena, it is evident that t

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cauſe of every ſenſation and motion in an animal body ariſes from the brain and ſpinal marrow, and that from theſe parts it is conveyed to every ſentient part through the medium of the nerves. Hence it follows, that the nerves are the organs by which the various ſenſations are produced. The manner, however, in which the nerves exerciſe ſenſe and motion; how the will is conveyed from the brain to the different parts, and how, from the different parts ſenſations are conveyed to the brain, remains involved in obſcurity; ſeveral hypotheſes have been deduced to explain it, but none appear to be ſatisfactory. See alſo page 133.

EYE.

The parts which form the eye are divided into external and internal. The EXTERNAL PARTS are the ſupercilia, or eyebrows; the palpebræ, or eyelids; the cilia, or eyelaſhes; the lachrymal gland; the lachrymal caruncle, a ſmall fleſhy ſubſtance at the inner angle of the eye; the puncta lachrymalia, two ſmall openings on the naſal extremity of each eyelaſh; the canalis lachrymalis, formed by the union of the ducts leading from the puncta lachrymalia, which meet and conſtitute it at the internal angle of the eye; the ſaccus lachrymalis, a dilatation of the canalis lachrymalis, and which ends in the ductus naſalis, a continuation of the ſame canal, which conveys the tears into the noſe; the muſcles of the eyelids; the muſcles of the bulb of the eye, and the fat of the orbit. The BULB OF THE EYE conſiſts of eight membranes, two chambers, and three humours. The bulb is covered anteriorly by an exquiſitely ſenſible and delicate membrane, which begins from the edge of the eyelaſh, and is reflected over the eye to the edge of the other eyelaſh. This membrane is the ſeat of inflammations of the eye, and is called the *tunica conjunctiva*. MEMBRANES. 1. The *ſclerotic*, which is white, and the outermoſt. 2. The *choroid*, which is highly vaſcular, and whoſe veſſels are called, from their direction, the *vaſa vorticoſa*. 3. The *retina*, which is the innermoſt; and, 4. The *hyaloid*, or *arachnoid*, which includes the vitreous humour. In the *anterior* part are, 5. The *cornea tranſparens*, which is a part of the ſclerotic. 6. The *iris*, a part of the choroid: it is of various colours; hence white, black, blue eyes, &c. 7. The *uvea*, which is the poſterior part of the iris; and, 8. The *capſule of the cryſtalline* lens. The CHAMBERS OF THE EYE are diſtinguiſhed into anterior and poſterior. The *anterior* is the ſpace between the tranſparent cornea and the fore part of the iris; the *poſterior* the ſpace between the uvea and capſule of the cryſtalline lens. The HUMOURS are the aqueous, the cryſtalline lens, and the vitreous. See *Hygrology*. CONNEXION OF THE BULB. Ante-

riorly

iorly, it is connected with the membrana con-unctiva; poſteriorly, with the orbit, by means f muſcles and the optic nerve. ARTERIES, or-italis interna, the central, and the optic. VEINS, mpty themſelves into the external jugulars.— ERVES. The optic, or firſt pair, and branches rom the third, fourth, fifth, and ſixth pair. USE. t is the organ of viſion. See *Phyſiology of Viſion*, age 134.

EAR.

The ſoft parts which form the ear are divided nto external and internal. The EXTERNAL SOFT ARTS are, the auricula, in which are various pro-inences and ſinuſes, as the helix, antihelix, tragus, ntitragus, concha auriculæ, ſcapha, ſeu foſſa navi-ularis, and lobulus; the meatus auditorius exter-us, and membrana tympani. The INTERNAL OFT PARTS are the perioſteum, a proper mem-rane, which lines every part of the internal ear, nd the Euſtachian tube, which begins by a large pening in the fauces, and gradually diminiſhes as t paſſes along its bony canal into the ear. AR-ERIES, auditoria interna and externa. VEINS, mpty themſelves into the external jugular. NERVES f the external ear are, branches of the ſeventh air, or nervus auditorius durus; and thoſe of the nternal part are branches alſo of the ſeventh pair, ut of the portio mollis. USE. It is the organ of earing. See *Phyſiology of Hearing*, page 135.

NOSE.

A prominence of the face between the eyes an mouth. Division, into root, back, apex, an alæ. Soft parts. Common integuments, mu cles, cartilages, perioſteum, perichondrium. Sof parts of the nostrils. A pituitary membrane which lines the internal ſurface of the noſe and al its cavities, contains the mucous glands, and ha diſtributed on it the olfactory nerves; and the periosteum. Arteries, branches of the internal maxillary. Veins, empty themſelves into the internal jugulars. Nerves, branches of the olfactory, ophthalmic, and ſuperior maxillary. Muciparous glands, ſituated every where in the pituitary membrane. Use, for ſmelling, reſpiration, and ſpeech. See *Phyſiology of Smelling*, page 134.

CAVITY OF THE MOUTH.

The parts which form this cavity are external and internal. The external are the lips, the philtrum, the chin, and the cheeks. Compoſition, common integuments and the muſcles of the upper and under jaw. Arteries of the external part are branches of the infra-orbital, inferior alveolar, and facial. Veins, empty themſelves into the external jugular. Nerves, from the fifth and ſeventh pair. The internal parts of the mouth are the palate, two alveolar arches, the gums, tongue, cavity of the cheeks, and three pair of ſalival glands. **Use**, for maſtication, ſpeech, reſpiration, deglutition, ſuction, and taſte.

PHYSIOLOGY OF MASTICATION.

Maſtication is the comminution of the food between the teeth, effected by the jaws, the tongue, cheeks, and lips. The powers which move theſe parts are their various muſcles, by which the lower jaw is pulled from the upper and again brought to it, whilſt the tongue perpetually puts the food between the teeth, and the cheeks and lips impede it, when maſticated, from falling out of the mouth. By this proceſs, the food is divided, lacerated, and, as it were, ground, and mixed with the ſaliva and mucus of the mouth and the atmoſpherical air, and thus rendered fit to be ſwallowed and digeſted; ſo that maſtication is in fact an incipient digeſtion.

TONGUE.

A muſcular body, moveable in every direction, ſituated in the cavity of the mouth. **Division**, into baſis, body, ſides, apex. **Connexion**, with the os hyoides, bottom of the infra-lingual cavity, and lower jaw. The **nervous papillæ**, which are ſituated at the apex of the tongue, are pyramidal, fungiform, or conoid. **Substance**, fleſhy, covered by cuticle, rete mucoſum, cutis, and cellular membrane. **Lingual arteries**, branches of the external carotid. **Veins**, empty themſelves into the external jugulars. **Nerves**, from

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the fifth, eighth, and ninth pair. **Glands** are muciparous. **Use**, for ſpeech, maſtication, deglutition, ſuction, and taſte. See page 136.

OF THE NECK.

The parts which form the neck are divided into external and internal. The **external parts** are the common integuments; the muſcles of the neck; eight pair of cervical nerves; two carotid arteries; two vertebral arteries; two external jugular veins; two internal jugular veins; the jugular glands; the thyroid gland; the eighth pair of nerves of the cerebrum; and the great intercoſtal. The **internal parts** are, the fauces; pharynx; œſophagus; larynx, and the trachea.

FAUCES.

The cavity behind the tongue and the curtain of the palate, or velum palatinum. **Soft parts**, common integuments and muciparous glands. **Arteries**, branches of the external carotid. **Veins**, empty themſelves into the internal jugular. **Muscles**, ſee *Myology*. **Nerves**, from the fifth and eighth pair. **Use**, for deglutition, reſpiration, ſpeech, and hearing.

PHARYNX.

A muſcular ſac, like a funnel, ſituated behind the larynx, adhering to the fauces, and terminating in the œſophagus. **Connected**, by means of muſcles, with the cranium; vertebræ; and os hyoides. **Use**, to receive the maſticated food, and convey it into the œſophagus.

ŒSOPHAGUS.

A membranous muſcular tube, deſcending from the pharynx to the ſtomach. **Composed** of three membranes, viz. a common, muſcular, and villous. **Arteries**, branches of the aorta. **Veins**, empty themſelves into the vena azygos. **Nerves**, from the eighth pair and great intercoſtal. **Muciparous glands**, every where. **Use**, for deglutition.

PHYSIOLOGY OF DEGLUTITION.

Deglutition is the conveying of the maſticated food from the cavity of the mouth into the fauces, and from the fauces through the œſophagus into the ſtomach. This is performed by the jaws ſhutting, ſo as to prevent the food from falling out of the mouth; the tongue is then applied to the palate, by which the food lying upon the back of the tongue is preſſed into the cavity of the fauces, where it is received by the dilated pharynx. The pharynx then is irritated to contract, by which the food is expelled into the œſophagus, by the contraction of whoſe muſcular fibres it is conveyed through the cardia into the ſtomach.

The pharynx is dilated by its dilatatory muſcles, and by the root of the tongue, os hyoides, and larynx being drawn forwards and backwards by their proper muſcles.

The food is prevented during the act of ſwallowing from paſſing into the poſterior opening of the noſtrils, the Euſtachian tube, and larynx, by the velum pendulum palati and uvula being preſſed againſt the former, and the epiglottis being bent backwards over the glottis.

When a fluid is to be drank, the head inclines backwards, the ſame actions take place, and the fluid paſſes on each ſide of the epiglottis. During deglutition the food is covered with the mucus of the fauces and œſophagus.

LARYNX.

A cartilaginous cavity, ſituated behind the tongue in the anterior part of the fauces. **Composed** of five cartilages; various muſcles; and an internal nervous membrane. **Cartilages**, the *epiglottis*, at the root of the tongue; the *thyroid*, or *ſcutiform*, which is the largeſt, and two *arytænoid* cartilages; and the *cricoid* cartilage, which is below the thyroid. *A very ſenſible membrane* covers their internal ſurface. The ſuperior opening of the larynx, through which the air paſſes, is called the *glottis*. **Arteries**, branches of the external carotid. **Veins**, empty themſelves into the external jugular. **Nerves**, branches of the eighth pair. **Glands**,

Glands, the thyroid. **Use.** It is the organ of the voice, and ſerves alſo for reſpiration.

PHYSIOLOGY OF THE VOICE.

The voice is cauſed by the ſound of the air propelled through the glottis; ſo that the organ of the voice is the larynx and its muſcles.

The ſhrillneſs and roughneſs of the voice depends on the diameter of the glottis, its elaſticity, mobility, and lubricity, and the force with which the air is expelled: thus when the diameter is increaſed, the voice is more baſs, and *vice verſa.*

SPEECH

Is the modification of the voice in the cavity of the mouth and noſtrils.

VENTRILOQUISM

Conſiſts in the motion of the uvula, epiglottis, and fauces, by which the ſounds are modulated without the lips, teeth, or palate. The mouth being nearly ſhut, and the voice reſounding between the larynx and cavity of the noſe, the ſound is returned as if emitted by ſome one at a diſtance.

TRACHEA.

A tube, compoſed of cartilaginous rings continued from the larynx, and ſituated before the œſophagus. It deſcends to the ſternum, and there divides into two branches called *bronchia.* The

bronchia,

bronchia, entering the ſubſtance of the lungs, divide into innumerable little branches, which terminate in the *veſiculæ pulmonales*, or air-cells. The cartilaginous rings of the trachea and bronchia are not completely cartilaginous, but fleſhy on the back part. The internal ſurface is lined by a *very ſenſible membrane* continued from the larynx. **Vessels** and **nerves**, common with the larynx. **Use**, for reſpiration and ſpeech.

OF THE THORAX.

The cavity ſituated between the neck and abdomen is called the *thorax*, or breaſt. The **external parts** are, the common integuments; the mammæ, or breaſts; various muſcles and bones. The **internal parts** are, the pleura; lungs; heart; thymus gland; œſophagus; thoracic duct; the arch of the aorta; branches of the vena cava; the vena azygos; the eighth pair of nerves, and part of the great intercoſtal nerve.

MAMMÆ, OR BREASTS.

Two ſoft hemiſpheres adhering to the anterior and lateral region of the thorax, moſt conſpicuous in females. On the middle of the external ſurface is the *papilla*, around which is the coloured orb or diſc of the papilla, called *areola*. **Sub-**

STANCE, common integuments; adipoſe ſubſtance; lacteal glands and veſſels. ARTERIES, external and internal mammary. VEINS, empty themſelves into the axillary and ſubclavian vein. NERVES, branches of the coſtalis ſuperior. LYMPHATICS, empty themſelves into the ſubaxillary glands. USE, to ſuckle new-born infants.

PLEURA.

A membrane lining the internal ſurface of the thorax, and covering its viſcera. It forms a great proceſs, called the *mediaſtinum*, which is a membranous ſeptum to the cavity of the thorax, dividing it perpendicularly into two cavities, ariſing from the duplicature of the pleura. It is CONNECTED with the ribs, muſcles, ſternum, bodies of the dorſal vertebræ, pericardium, and diaphragm. SUBSTANCE, fibrous and vaſcular. ARTERIES, from the intercoſtals. VEINS, empty themſelves into the intercoſtals. NERVES, very few. USE, to divide the thorax into two cavities, and render the ſurface moiſt by the vapour it exhales, and to give a membrane to the lungs and pericardium.

DIAPHRAGM.

A fleſhy and tendinous diviſion, ſeparating the cavity of the thorax from the cavity of the abdomen. ADHESION, anteriorly with the ſternum and ribs, poſteriorly with the vertebræ. SUBSTANCE, in the centre, tendinous; in the ambit, fleſhy: its ſuperior ſurface is covered by the pleura; its inferior by the peritoneum. **Apertures**, a *right foramen*, through which the vena cava aſcendens paſſes to the right auricle of the heart, a *left foramen*, through which the œſophagus and the par vagum paſs into the cavity of the abdomen, and a *poſterior opening*, which tranſmits the aorta into the abdomen, and the thoracic duct and vena azygos, into the thorax. **Arteries**, from the deſcending aorta. **Veins**, empty themſelves into the vena azygos. **Nerves.** The diaphragmatic, or phrenic nerves, ariſe from the ſpinal nerves of the neck. **Use**, for reſpiration, ſituation of the heart, expulſion of fæces, and parturition.

LUNGS.

Two viſcera, ſituated in the cavities of the thorax, by which we breathe. **Division**, into right and left lung; the right has three *lobes*, the left only two. **Connexion**, with the neck and heart. **Substance**, veſicular, vaſcular, and bronchial, connected together by a parenchymatous ſubſtance. It has an external membrane from the pleura. **Vessels**, pulmonary and bronchial. **Nerves**, from the eighth pair and great intercoſtal. **Lymphatics**, are to be ſeen on its external ſurface. **Glands**, called bronchial. **Use**, for reſpiration, ſanguification, and voice.

PHYSIOLOGY OF RESPIRATION.

Reſpiration conſiſts of *inſpiration*, or the ingreſs of the air into the lungs, and *expiration*, or the egreſs of the air from the lungs.

During ſleep, reſpiration is performed without our knowledge, and therefore termed *ſpontaneous*; but when it can be augmented or diminiſhed according to our will, it is termed *voluntary*. The *exciting cauſe* of inſpiration is the air ruſhing into the lungs and irritating its nerves, which irritation is by conſent of parts communicated to the diaphragm and intercoſtal muſcles, and compels them to contract. The contraction of the intercoſtal muſcles and diaphragm, and the preſſure of the elaſtic air, therefore dilate the cheſt. The air being deprived of its ſtimulus, the intercoſtal muſcles and diaphragm become relaxed, the cartilages of the ribs and abdominal muſcles, before expanded, return to their former ſtate, and thus the air is expelled from the lungs. The ſmall branches of the pulmonary artery form a beautiful *net-work of veſſels* on the internal membrane of the air veſicles. During expiration, the air-veſſels are collapſed; conſequently the blood-veſſels become tortuous, and the blood is prevented paſſing. In inſpiration then, the air veſicles being dilated, the tortuous veſſels are elongated, and a free paſſage afforded to the blood: the very delicate coats of theſe veſſels are alſo rendered ſo thin as to ſuffer a *chemical action* to take place between the air in th vesicles and the blood in the veſſels. This conſtitutes the primary uſe of reſpiration; viz. th blood abſorbing the oxygen from the atmoſpheri air, by which the nervous energy is increaſed, an it is generally believed, heat generated; but thi ſubject is yet undetermined.

PERICARDIUM.

A membranous ſac ſurrounding the heart. **Adhesion**, with the diaphragm, pleura, ſternum, cartilages of the ribs, œſophagus, aorta deſcenden and the veins and great arteries going to and from the heart. **Arteries**, branches of the interna mammary and mediaſtinal. **Veins**, empty themſelves into the internal mammary. **Nerves**, from the ſuperficial cardiacs. **Use**, to contain the hear and to ſeparate a fluid, which may lubricate an preſerve it from concretion with the pericardium.

HEART.

A muſcular viſcus, ſituated in the cavity of the pericardium, which ſerves for the motion of the bloo **Division**, externally into baſe, ſurfaces, and margins; internally, into auricles and ventricles. **Situation**, oblique, not tranſverſe. The **cavit of the heart** are called auricles and ventricle The auricles are ſituated upon the baſe of th heart, and are ſo named from their reſemblance t dogs ears. They are compoſed of muſcular fibr

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which are very delicate, and are lined by an extremely ſenſible and contractile membrane. They ſurround the origin of the aorta and pulmonary arteries, when diſtended, and are ſeparated from each other by the *ſeptum auricularum*.

The RIGHT AURICLE has opening into it, at its upper part, the vena cava ſuperior, at its lower part the vena cava inferior, and at one ſide the large coronary vein; ſo that its office is that of receiving the blood from every part of the body. Beſides theſe *openings*, it has one much larger, communicating with the right ventricle, from the margin of which there hangs into the right ventricle, connected with the chordæ tendineæ, a valve, called, from its ſhape, the *tricuſpid*, or triglochine valves.

The LEFT AURICLE is compoſed of the ſame materials as the right; it has opening into it the four pulmonary veins; ſo that the blood of the pulmonary artery paſſes through the lungs into the left auricle. Beſides the openings of the four pulmonary veins, the left auricle has a communication with the left ventricle, and from the margin of this opening there hangs into the left ventricle a valve, which, from its reſemblance to a biſhop's mitre, is termed the *mitral valve*. It is alſo connected to the chordæ tendineæ of the ventricle.

The ventricles are ſituated in the ſubſtance of the heart, and are divided from each other by a thick muſcular ſeptum, called *ſeptum cordis*. The parietes of the ventricles are very thick, and compoſed of ſtrong muſcular fibres. In the ventricles ar a number of fleſhy cords, running in various directions; theſe are called *carneæ columnæ*, and many of them are connected with the valves of the auricular openings by tendinous cords, termed *chordæ tendineæ*. The ventricles are lined by a ſimilar membrane to that which lines the auricles.

The RIGHT VENTRICLE has a communication with the right auricle, as before mentioned, in order to receive its blood; it has alſo an opening into the pulmonary artery, which ariſes from it, and through which organ the blood is expelled from the ventricle. At the origin of the artery three large valves are placed, called, from their ſhape, *ſemilunar valves*.

The LEFT VENTRICLE is much ſtronger than the right: beſides the opening for the entrance of the blood from the left auricle, it has alſo an opening through which it tranſmits its blood, and this is into the aorta, which ariſes from it, and has, like the pulmonary artery, three *ſemilunar valves* placed at its origin.

VESSELS are common and proper: the *common* are the aorta, pulmonary artery and veins, and the vena cavas; the *proper* are the coronary arteries and veins. NERVES, branches of the eighth pair and great intercoſtal. USE. It is the primary organ of the motion of the blood.

CIRCULATION OF THE BLOOD.

The blood is continually in motion, paſſing from the auricles of the heart into the ventricles; from the ventricles into all the arteries of the body, and from the arteries into the veins, which return it again to the auricles. The blood is brought from every part of the body to the heart by the two venæ cavæ (the ſuperior bringing it from the head, upper extremities, and thorax, and the inferior from the abdomen and inferior extremities), which terminate in the right auricle. The right auricle, when diſtended with blood, contracts, and empties itſelf into the right ventricle; the right ventricle then contracts, and propels the blood into the pulmonary artery, the opening between the ventricle and auricle being ſhut by the tricuſpid valves. The pulmonary artery conveys the blood by its numerous ramifications into the ſmall branches of the air-cells of the lungs, where it undergoes a change, and paſſes into the veins which bring it by four trunks into the left auricle of the heart. It is prevented returning from the pulmonary artery into the right ventricle, by the three ſemilunar valves which are placed at its origin. The blood having thus paſſed through the lungs, and become of a florid colour, diſtends the left auricle, which is then ſtimulated to contract, and pours the blood into the left ventricle. The left ventricle next contracts, and propels the blood through the aorta, to be conveyed by its branches to every part of the body. The mitral valves, which are placed at the auricular opening into the left ventricle, prevent the blood from returning, when the ventricle contracts, into the auricle: and leſt the blood ſhould be prevented by any impediment paſſing immediately along the aorta, the three ſemilunar valves placed at its origin prevent its regurgitating into the ventricle. From the numerous arteries of the aorta the blood is conveyed into the veins, where it loſes its florid colour, and becomes darker, to be returned, in the way above mentioned, to the right auricle. Thus the blood of the right auricle and ventricle, and of the pulmonary arteries, is of a dark colour; and that of the pulmonary veins, left auricle, ventricle, and all the arteries (except the pulmonary), of a florid hue.

From what has been ſaid, it is evident that the action of the heart conſiſts in the alternate contraction and dilatation of its auricles and ventricles.

The dilatation of the heart is termed *diaſtole*, and the contraction *ſyſtole*. The exceſſive ſenſibility of the membrane which lines the auricles and ventricles diſpoſes them to contraction, which is effected by the irritation of the ſtimulus of the blood, and by that of the diſtenſion of its cavities.

OF

OF THE ABDOMEN.

A cavity ſituated between the thorax and pelvis. Divided into ſeveral regions, as has already been mentioned. The EXTERNAL PARTS are the common integuments, five pair of abdominal muſcles, and the peritoneum. The INTERNAL PARTS, or VISCERA, are the omentum, ſtomach, ſmall and large inteſtines, liver, gall-bladder, meſentery, lacteal veſſels, ſpleen, pancreas, kidneys, ſupra-renal glands, aorta deſcendens, and vena cava aſcendens.

PERITONEUM.

A membrane lining the internal ſurface of the abdomen, and covering all its viſcera. CONNECTED, by means of cellular membrane, with the diaphragm, abdominal muſcles, vertebræ of the loins, bones of the pelvis, urinary bladder, uterus, inteſtinum rectum, and all the viſcera of the abdomen. VESSELS OF THE PERITONEUM, from the adjoining parts. USE, to contain and ſtrengthen the abdominal viſcera, and to exhale a vapour to lubricate them.

OMENTUM, OR EPIPLOON.

An adipoſe membrane, a production of the peritoneum, attached to the ſtomach, and lying on the anterior ſurface of the inteſtines. DIVISION, into *large* and *ſmall* omentum. The *former* hangs pendulous from the great curvature of the ſtomach. The ſmall omentum fills up the ſpace between the ſmall curvature of the ſtomach, liver, &c. Immediately behind the biliary ducts there is an opening which will admit the finger, called the foramen of Winſlow. **Arteries**, branches of the cœliac. **Veins**, empty themſelves into the vena portæ. **Use**, to lubricate the inteſtines; keep them warm; and to preſerve them from concretion.

STOMACH.

A membranous receptacle, which receives the ingeſta from the œſophagus. **Situated** in the epigaſtric region. **Divided**, when empty, into an anterior and a poſterior ſurface; a great and little curvature; the cardia, or ſuperior opening; and the pylorus, or inferior opening. **Connexion**, with the œſophagus, duodenum, omentum, and pancreas. **Composed** of three membranes, or coats, viz. a common, muſcular, and villous coat. **Arteries**, branches of the cœliac—the coronaria, which goes to the ſmall curvature—the gaſtrica ſiniſtra, which is diſtributed to the great and ariſes from the ſplenic artery,—gaſtrica dextra, which paſſes to the great curvature, and the pylorica, ſupplying the pylorus; all of which unite with each other, and form a net-work of blood-veſſels. **Gastric veins** empty themſelves into the vena portæ, correſponding with the trunks of the arteries. **NERVES**, branches of the par vagum. **ABSORBENTS**, thoſe of the ſmall curvature terminate in the thoracic duct, where the cœliac artery is given off, and thoſe paſſing along the great curvature join with the abſorbents of the ſpleen. **GLANDS**, muciparous, under the internal tunic. **USE**, to receive the ingeſta from the œſophagus, and to retain, mix, digeſt, and expel it into the duodenum.

DIGESTION, OR CHYMIFICATION.

Digeſtion, or chymification, is the change which food undergoes in the ſtomach, by which it is converted into chyme.

The circumſtances neceſſary to effect a healthy digeſtion of the food are—

1. A certain degree of heat of the ſtomach.

2. A free mixture of ſaliva with the food in the mouth.

3. A certain quantity of healthy gaſtric juice.

4. The natural periſtaltic motion of the ſtomach.

5. The preſſure of the contraction and relaxation of the abdominal muſcles and diaphragm. From theſe circumſtances, the particles of the food are ſoftened, diſſolved, diluted, and intimately mixed into a ſoft pap, called chyme, which paſſes through the pylorus of the ſtomach into the duodenum.

INTESTINES.

The membranous tube, ſix times longer than the body, in the cavity of the abdomen, variouſly contorted from the pylorus of the ſtomach to the anus, is ſo called. **Division**, into ſmall and large. The **small** are the *duodenum*, which begins at the pylorus of the ſtomach, and is reflected over the ſpine under the peritoneum. It is about twelve fingers breadth in length, and has an oblique perforation near its middle, which is the common opening to the pancreatic duct and ductus communis choledochus. The *jejunum* and *ileum* compoſe the remainder of the ſmall inteſtines. They always hang from the meſentery into the cavity of the pelvis. There is no alteration of ſtructure in any part of the ſmall inteſtines, the termination of the one and beginning of the other is imaginary. The jejunum conſtitutes the firſt half from the duodenum, the other half is ileum. The ſmall inteſtines have internally a number of annular folds, which augment the ſurface for the ſituation of the lacteal and other veſſels; theſe are called *valvulæ conniventes*. They are peculiar to the ſmall inteſtines. The **large** inteſtines are divided into the cæcum, colon, and rectum. The *cæcum* lies upon the right hip over the iliacus internus muſcle, to which it is attached by cellular membrane: it is a large *cul de ſac*: the ſmall inteſtine opens obliquely into it, in ſuch a manner as to form a valve to impede the return of the fæces; and nearly oppoſite to this valve there ariſes from the cæcum a ſmall vermiform canal, imperforated at its extremity, called the *appendicula cæci vermiformis*. The inteſtine is now called colon; it aſcends towards the liver, and is called the *aſcending portion of the colon*, and having reached the liver, forms a *tranſverſe arch* acroſs to the other ſide. The colon then deſcends, forming what is termed its *ſigmoid flexure* into the pelvis, where the gut is termed the *rectum*, which terminates in the anus. The large inteſtines are lobulated, have ſometimes little fat portions adhering to them called *appendiculæ epiploicæ*, and alſo three longitudinal bands upon their external ſurface. **COMPOSED** of three membranes, or coats, one common, a muſcular one, and the third villous. **CONNEXION**, with the meſentery, kidnies, os coccygis, and urinary bladder, and in women with the vagina. **ARTERIES**, branches of the ſuperior and inferior meſenteric, duodenal, and internal hæmorrhoidal. **VEINS**, run into the meſeraic. Their **NERVES** are, productions of the eighth pair and intercoſtals. **LACTEAL VESSELS.** Theſe ariſe from the ſmall inteſtines, and run into the meſenteric glands. **GLANDS**, muciparous, under the villous coat. **USE**, to receive the chyme, and retain it for a time; to mix it with the enteric juice and bile; to ſeparate and propel the chyle into the lacteal veſſels; and to eliminate the fæces.

CHYLIFICATION.

This is the change of the chyme in the ſmall inteſtines into chyle. The chyme in the duodenum is mixed with the pancreatic juice, the bile, and enteric juice; from which mixture, effected by the continual periſtaltic motion of the inteſtines, a milk-like fluid is ſeparated, which is termed chyle, and is abſorbed by the pendulous opening of the lacteals, and conveyed through the meſentery into the thoracic duct, to be ſent into and mixed with the blood, to form new blood.

Chylification is performed quicker than chymification, and both are effected within three hours.

The excrementious particles of the food, called the fæces, are propelled into the cæcum, through the colon, and where they acquire a peculiar ſmell, into the rectum, to be expelled.

EXPULSION OF THE FÆCES.

The irritation of the fæces in the rectum induces it to contract, the ſphincter relaxes, and the fæces are protruded through the aperture of the anus, by the preſſure of the abdominal muſcles, and the anus cloſed again by the contraction of its ſphincter and levator muſcles.

MESENTERY.

A membranous duplicature, formed of a production of the peritoneum, to which the inteſtines adhere. **Division**, into meſentery, to which the inteſtines adhere, and meſocolon, to which the colon adheres. **Connexion**, with the lumbar vertebræ. **Arteries**, inferior and ſuperior, meſenteric, branches of the aorta deſcendens. **Veins**, empty themſelves into the vena portæ. **Nerves**, branches of the eighth pair and intercoſtals. The **glands**, which are ſituated in the meſentery, are called meſenteric glands. The lacteals proceed to theſe glands, and from them to the thoracic duct. **Uſe**, to ſtrengthen the inteſtines, and afford a ſituation to the lacteal veſſels, glands, and nerves, blood-veſſels, &c. of the inteſtines.

LIVER.

The largeſt of the abdominal viſcera, placed in the right hypochondriac region, and ſomewhat in the epigaſtric. **Division**, into three lobes; the great, ſmall, and a leſs one, called the Spigelian. **Connexion**, with the diaphragm, by means of the ſuſpenſory and other ligaments. **Substance**, vaſcular. The **glands** which compoſe the ſubſtance of the liver are called *acini biliofi*. The **excretory ducts of the glands** are termed *pori biliari*: they ariſe from the acini of the liver, form larger trunks, called *ductus hepatici*, which converge together, and conſtitute a common canal, the *ductus hepaticus*, which unites with the cyſtic duct, and forms the ductus communis choledochus. **Uſe**, to ſecrete bile.

GALL-BLADDER.

An oblong membranous receptacle, ſituated under the liver, in the right hypochondrium. **Division**, into bottom, body, and neck, which terminates in the ductus cyſticus. The *ductus cyſticus* ariſes from the gall-bladder, proceeds to the duodenum, and unites with the *ductus hepaticus*, to form the *ductus communis choledochus*, which perforates the duodenum, and conveys the bile into the inteſtines. The gall-bladder is **composed** of three membranes, a common, fibrous, or muſcular and villous. **Arteries**, branches of the hepatic. **Veins**, empty themſelves into the vena portæ. **Absorbents**, very numerous. **Nerves**, from the eighth pair and intercoſtals. **Glands**, muciparous. **Use**, to retain the gall, which regurgitates from the hepatic duct, there to become thicker, more bitter, and acrid.

SPLEEN.

A ſpongy viſcus, ſituated in the left hypochondrium, near the fundus of the ſtomach, under the ribs. **Figure**, oval. **Connexion**, with the omentum, diaphragm, pancreas, and colon. **Arteries**, the ſplenic artery is a branch of the cœliac. **Veins**, empty themſelves into the vena portæ. **Absorbents**, very numerous. **Nerves**, from the par vagum and great intercoſtal. **Use**, unknown.

PANCREAS.

A glandular body, of a long figure, compared to a dog's tongue, ſituated in the epigaſtric region, under the ſtomach. **Composed** of innumerable ſmall glands, the excretory ducts of which unite and form the pancreatic duct. Its external membrane is from the meſocolon. **Arteries**, from the neighbouring parts and ſplenic artery. **Veins**, evacuate themſelves into the ſplenic. The *pancreatic duct* perforates the duodenum with the ductus communis choledochus, and conveys its ſecretion into the inteſtines. **Use**, to ſecrete a humour ſimilar to ſaliva, and carry it into the duodenum.

LACTEAL VESSELS.

The abſorbing veſſels of the meſentery are ſo termed, becauſe they convey the chyle, a milk-like fluid, from the inteſtines into the thoracic duct. **Origin**, from the ſurface of the duodenum, jejunum, and ileum. **Termination**, in the thoracic duct, or trunk of the abſorbents, which runs near the aorta on the ſpine, and empties its contents into the jugular vein. As they run through the meſentery, they paſs through a number of glands, in which the chyle is altered, and then proceed to their trunk. **Use.** To carry the chyle from the inteſtines into the blood. See *the Phyſiology of Abſorption and the Abſorbents*, pages 116. 120.

KIDNEYS.

Two viſcera, which ſecrete the urine. **Situated** behind the ſac of the peritoneum, near the bodies of the ſuperior lumbar vertebræ. **Substance**, of three kinds; cortical, tubular, and papillous. **Integuments, or coverings**, adipoſe membrane, and a membrana propria. The **renal arteries, or emulgents**, are branches of the aorta deſcendens. The **veins** empty themſelves into the cava inferior. The **nerves** of the kidneys are branches of the eighth pair and intercoſtal. The excretory ducts of the kidneys are called the **ureters**, canals which convey the urine from the kidneys into the bladder. **Use**, to ſecrete urine.

EXCRETION OF THE URINE.

The urine is ſeparated from the blood by the extremities of the renal arteries, which open in the ſubſtance of the kidney into the tubuli uriniferi, from whence it is received into the pelvis of the kidney, and paſſes along the ureter into the urinary bladder guttatim, where it uſually remains a few hours, in conſequence of the ſphincter of the bladder being contracted. It is prevented returning into the ureters by their entrance being oblique and valvular. The urine having remained a few hours in the bladder, excites a deſire to void it, by which ſtimulus the ſphincter becomes relaxed, the muſcular ſtructure of the bladder contracts, and by the aſſiſtance of the abdominal muſcles and the acceleratores urinæ the urine is propelled along the urethra.

SUPRA-RENAL GLANDS.

Two triangular flat bodies, SITUATED, one above each kidney. USE, not known.

OF THE PELVIS.

The pelvis is a cavity below the abdomen and under the pubes, containing the urinary bladder, rectum, and organs of generation.

URINARY BLADDER.

A membranous ſac under the peritoneum, in the cavity of the pelvis. SITUATION, in men, between the pubes and rectum; in women, between the pubes and uterus. DIVISION, into fundus, body, and neck. COMPOSED of three membranes, like the inteſtines. ARTERIES, branches of the hypogaſtric and hæmorrhoidal. VEINS, empty themſelves into the hypogaſtric. NERVES, branches from the intercoſtal and ſacral nerves. GLANDS, muciparous. USE, to receive, retain, and expel the urine.

THE MALE ORGANS OF GENERATION.

Theſe are, the penis, teſticles, and veſiculæ ſeminales.

PENIS,

Alſo called membrum virile, or yard, is that cylindrical part which hangs down under the mons Veneris, before the ſcrotum. **Division**, into root, body, and head, called *glans*. The hairy prominence, which covers the pubes, is called *mons Veneris*. **Substance.** It conſiſts of common integuments, two corpora cavernoſa; the corpus ſpongioſum urethræ; and the urethra. The *corpora cavernoſa*, which form the chief bulk of the penis, are compoſed of a cellular and very elaſtic ſubſtance, and ariſe by two crura, one from each aſcending ramus of the iſchium. The *corpus ſpongioſum* begins before the proſtate gland, and ſurrounds the urethra. At its beginning it forms the bulbous part of the urethra, and then proceeds forwards, to be expanded at the extremity of the penis into a very vaſcular ſubſtance, called *glans penis*, which is naturally covered by a fold of the ſkin, called the *prepuce*. The *urethra* is a membranous canal, which proceeds from the bladder through the corpus ſpongioſum urethræ to the meatus or opening in the glans penis. It is endowed with a high degree of ſenſibility and contractility. The *verumontanum*, or *caput gallinaginis*, is a cutaneous eminence in the urethra, before the neck of the bladder. GLANDS, muciparous; odoriferous; Cowper's glands; and the proſtate. See *Adenology*. The penis is CONNECTED with the urethra, pubes, and iſchium. ARTERIES are branches of the hypogaſtric and iſchiatic. The DORSAL VEIN of the penis, called *vena magna ipſius penis*, empties itſelf into the vena hypogaſtrica. ABSORBENTS, run under the common integuments, to the inguinal glands. NERVES, branches of the ſacral nerves and iſchiatic. USE, for erection, coition, effuſion of ſemen, and of urine.

TESTICLES.

Two oval bodies contained in the cavity of the ſcrotum. The EPIDIDYMIS is an hard vaſcular ſubſtance, formed of convoluted vas deferens, lying on the teſticle. INTEGUMENTS of the teſticle are, the ſcrotum; *tunica albuginea*, which is ſmooth, and adheres very firmly to the body of the teſticle; and the *tunica vaginalis*, which deſcends with the ſpermatic chord, and ſurrounds the teſticle, as the pericardium does the heart. COMPOSED of white ſlender canals, which terminate in the epididymis, and form into one great canal, the vas deferens, which proceeds from the teſticle into the abdomen, over the os pubis, and then deſcends

into

into the pelvis, to be inſerted into the veſiculæ ſeminales. **Spermatic arteries**, are branches of the aorta. **Spermatic veins**, empty themſelves into the vena cava, and left vena renalis. **Nerves**, branches of the lumbar and great intercoſtal. **Absorbents**, aſcend from the teſticle through the chord. The *funiculus ſpermaticus*, or ſpermatic chord, conſiſts of the vas deferens, ſpermatic artery and vein, ſpermatic nerves, abſorbent veſſels, and tunica vaginalis, which the cremaſter muſcle ſurrounds. **Use**, to ſecrete and prepare ſemen.

SECRETION AND EXCRETION OF THE SEMEN.

The ſemen is ſecreted by minute branches of the ſpermatic arteries, that depoſit it into correſponding ſeminal veſſels, which compoſe the greateſt part of the body of the teſticle. The ſemen is the proper ſtimulus to theſe veſſels, which are therefore ſtimulated to contract, and by a very ſlow motion convey it into the epididymis and vas deferens, by which it is carried through the inguinal ring into the pelvis, to be depoſited in the veſiculæ ſeminales, where it excites a deſire to emit it. The cells of the corpora cavernoſa penis are diſtended with blood by the venereal ſtimulus; hence the penis ſwells, and is inclined for coition, during which action, at the time of the *æſtrum venereum*, the veſiculæ ſeminales contract, and the ſemen is thrown with an immenſe force, through the ejaculatory ducts, opening into the urethra, where it is mixed with the ſecretion from the proſtate gland, which is expelled at the ſame moment, and paſſes with it along the urethra, to be propelled by the contraction of the ejaculatory muſcles into the cavity of the uterus.

VESICULÆ SEMINALES.

Two membranous receptacles, which receive and contain the ſemen from the vaſa deferentia. They are SITUATED on the back part of the bladder, above its neck. SUBSTANCE, membranous, white, and covered with a fibrous ſubſtance. The *ejaculatory ducts* are ſome lines long, and enter the cavity of the urethra from each veſicle, by a peculiar orifice at the top of the verumontanum. VESSELS and NERVES, from the neighbouring parts. ABSORBENT VESSELS, ariſe from the veſiculæ ſeminales, and run to the lymphatic glands about the loins. USE, to contain, retain, inſpiſſate, and excern the ſemen into the urethra.

THE ORGANS OF GENERATION IN WOMEN.

The parts which ſerve for generation in women are divided into external and internal. The

EXTERNAL PARTS are the mons Veneris; the *labia majora*, two cutaneous folds, ſituated externally; the *labia minora*, or *nymphæ*, alſo two cutaneous folds, like a cock's-comb, placed at the ſides of the vagina; the *clitoris*, a ſmall glandiform body, like a penis in miniature, placed under the ſuperior commiſſure of the nymphæ; and the *hymen*, a membrane for the moſt part ſemilunar, ſituated at the entrance of the virgin vagina. The INTERNAL PARTS are the vagina; uterus; Fallopian tubes; ovaria; broad and round ligaments of the uterus; and the urethra.

VAGINA.

An elaſtic canal leading from the external opening of the vulva to the uterus. COMPOSED of three membranes; the outermoſt is cellular, the middle muſcular, and the internal rugous. GLANDS, mucous; ſituated under the internal membrane. USE, to receive the penis, and for the paſſage of the child in delivery.

UTERUS, OR WOMB.

A ſpongy receptacle, like a flattened pear; ſituated in the pelvis between the urinary bladder and rectum. DIVISION, into fundus, body, neck, and orifice, called *os tincæ*. SUBSTANCE OF THE UTERUS, ſpongy, interwoven with muſcular fibres. ARTERIES, the ſpermatic, which are branches of the aorta; and the uterine, which are from the hypogaſtric and hæmorrhoidal. **Uterine veins** are without valves, and empty themſelves into the ſpermatic, hypogaſtric, and external hæmorrhoidal veins. **Absorbents** run into the iſiac glands. **Nerves** are branches of the ſacral and iſchiatic. **Glands**, mucous. **Use**, for conception, nutrition of the fœtus, parturition, and menſtruation."

PHYSIOLOGY OF MENSTRUATION.

By a law of nature women menſtruate in this climate from about the age of fifteen to forty-five. Menſtruation is the efflux (by ſome thought to be a ſecretion) of blood from veſſels opening into the cavity of the uterus. During pregnancy, the *catamenia*, or *menſes*, for ſo the diſcharge is called, ſtop, except in ſome few inſtances, where it is ſupplied by the veſſels of the vagina.

The nature of menſtrual blood, if women be healthy, differs only from other blood in its not coagulating, which may be cauſed by its ſlow exit, and its mixture with the ſecretions of the uterus and vagina. It differs, however, in quantity, the period of its firſt appearance, its duration, and the ſymptoms which precede and accompany it, according to the age, temperament, habit of body, climate, ſeaſon of the year, mode of living, and other circumſtances.

Women are ſaid to be moſt ſuſceptible of the action of the vivifying principle of the ſemen during the period of menſtruation.

PHYSIOLOGY OF CONCEPTION.

The congreſs between man and woman is called coition, which is ſo well known as to require no deſcription.

During coition the nymphæ and clitoris are tumid with blood, and the fimbriæ of the Fallopian tubes, by a power inherent in them, are ſtretched out, and applied over the ſurface of an ovum in the ovarium.

The pleaſure which women experience during coition is very great, and a quantity of mucus is ſuddenly emitted from the glands of the vagina, during the venereal orgaſm, which in former times was erroneouſly ſuppoſed to be the ſemen of the female, but now it is the opinion of phyſiologiſts that women have no ſemen, as anatomy cannot detect any organ by which it can be ſecreted.

In order that a woman *may conceive*, it is requiſite that ſhe ſhall have menſtruated; that the ovum in the ovarium ſhall have arrived at a ſtate of maturity, and that the fimbriæ of the Fallopian tube ſhall be ſtretched around the mature ovum, ſo as to let the cavity of the Fallopian tube come immediately over it. In this ſtate, the male ſemen is emitted into the uterus, and its vivifying part, which is extremely ſubtile, and called the *aura* *ſeminis*, flies through the cavity of the uterus along the Fallopian tube to the mature ovum, to which it imparts a principle by which it begins to circulate its fluids and is animated. The ovum being thus vivified, enlarges and ruptures the ſlender tunic of the ovarium, in which it was encloſed. At the time of its rupturing, the fimbriæ of the Fallopian tube embrace it, and it is rolled, by the periſtaltic motion of the latter, into the cavity of the uterus, there to be perfected, and at the expiration of nine months to be ſent into the world.

OF THE GRAVID UTERUS.

The parts of the gravid uterus are, the uterine placenta, the umbilical chord, the membranous ovum of the fœtus, the liquor amnii, and the fœtus.

UTERINE PLACENTA.

A ſpongy maſs, like a cake, generally adhering to the fundus of the gravid uterus, compoſed of a net-work of very numerous veſſels. SUBSTANCE, cellular, like a ſponge filled with veſſels. ABSORBENTS have been lately diſcovered. NERVES, none. USE, to receive and prepare the blood from the uterus for the fœtus, and give off branches to the umbilical vein.

FUNICULUS UMBILICALIS, OR UMBILICAL CHORD.

A chord of an inteſtinal form, which runs from the navel of the fœtus to the centre of the placenta. **Length**, moſtly about half a yard. **Composed** of a cutaneous vagina, or ſheath, cellular ſubſtance, one umbilical vein, and two umbilical arteries. **Use.** The umbilical vein of the fœtus conveys the blood from the placenta to the fœtus, and the two umbilical arteries return it from the fœtus to the placenta.

MEMBRANOUS OVUM OF THE FŒTUS.

The fœtus is encloſed in a membranous ovum or bag within the cavity of the uterus. The *ovum* conſiſts of three membranes; an outer, or filamentous, called *decidua;* a middle one, called the *chorion;* and an inner one, termed the *amnion*. **Use**, to include the liquor amnii, to prevent its flowing into the uterus, and at the commencement of parturition, to aſſiſt in dilating the os uteri.

LIQUOR AMNII, OR LIQUOR OF THE AMNION.

A lymphatic liquid, encloſed in the cavity of the ovum ſurrounding the fœtus, ſecreted by the exhaling arteries of the membranes of the ovum. **Quantity**, about the time of parturition, two or three pounds. **Property**, gelatinous, like turbid ſerum of milk. Use, to defend the fœtus from the preſſure of the uterus, to give it nouriſhment, to dilate the orifice of the uterus in labour, and to lubricate the vagina.

FŒTUS.

During the firſt month of pregnancy, the ovum is about the ſize of a pigeon's egg; the fœtus ſwims in the middle of the liquor amnii, and repreſents a little cloud, which gradually enlarges, and its parts become more firm and perfect. The parts of the fœtus at birth differ from the adult, in having a *foramen ovale*, a *canalis arterioſus*, and a *canalis venoſus*. The lungs are black, collapſed, and ſink in water. The liver is large. All the ſmall glands are alſo proportionately large, and the large inteſtines are filled with meconium. All the canals and veſſels peculiar to the fœtus are obliterated after birth, and become ligaments.

PECULIARITIES IN THE ARTERIAL AND VENAL SYSTEM OF THE FŒTUS.

The fœtus has—an *umbilical vein*, which goes to the liver, and two *umbilical arteries*, which ariſe from the internal iliac—a *canalis venoſus*, or vein, which proceeds from the ſinus of the vena portæ into the vena cava inferior—an opening in the ſeptum of the auricles, called the *foramen ovale*—and a *canalis arterioſus*, or artery which ariſes from the pulmonary artery, and paſſes obliquely into the aorta. After birth theſe veſſels gradually become impervious, and at length are removed by the abſorbents.

CIRCULATION OF THE BLOOD IN THE FŒTUS.

The fœtus receives its blood from the mother through the umbilical vein of the funis, which tranſmits it along the ductus venoſus into the vena cava, to be carried to the right auricle of the heart; from the right auricle it paſſes partly through the foramen ovale into the left auricle, and partly into the right ventricle. From the right ventricle it is propelled into the pulmonary artery, which ſends a very ſmall proportion through the lungs and the remainder through the canalis arterioſus into the aorta. The blood is returned from the fœtus by the two umbilical arteries, along the chord, to the mother.

HYGROLOGY,

OR

DOCTRINE OF THE FLUIDS.

THE fluids of the body are divided into *crude*, as the chyle; *ſanguineous*, as the blood; *lymphatic*, as the lymph of the lymphatic veſſels; *ſecreted*, or thoſe ſeparated from the blood; and *excrementitious*, as urine, fæces, &c.

The ſecreted fluids are ſubdivided into *lacteal*, as the juice of the proſtate gland; *aqueous*, as the aqueous humour of the eye; *mucous*, as the mucus of the noſtrils; *albuminous*, as the ſerum of the blood; *oleous*, as the oil of the adipoſe membrane; and *bilious*, as the bile.

Fluids are alſo divided, from their motion, into *circulatory*, which continually circulate in the veſſels; *commorant*, which circulate with a ſlow motion, as the ſemen, oil of the adipoſe membrane; *ſtagnant*, which remain for a certain time in any receptacle, as cyſtic bile, &c.

FLUIDS COMMON TO THE WHOLE BODY.

THE BLOOD.

A red fluid, which circulates in the cavities of the heart, arteries, and veins. Colour, in the arteries, of a *florid* hue; in the veins *darker*, except in the pulmonary veins, in which it is of a *lighter* caſt. Blood expoſed to the atmoſphere ſpontaneouſly *ſeparates* by degrees into two parts, viz. the *ſerum*, a yellow and ſomewhat greeniſh fluid; and a *cake*, called alſo the *cruor*, or *craſſamentum*, which reſembles a red maſs ſwimming like an iſland in the ſerum. Use, to ſtimulate the cavities of the heart and veſſels to contraction; to generate the heat of the body, and propagate it to every part; to nouriſh every part; and to ſupply all the ſecretions, they being all ſeparated from the blood.

THE LYMPH OF THE LYMPHATIC VESSELS.

A taſteleſs cryſtalline liquid, contained in the lymphatic veſſels. **ABSORBED** from the ſurface; tela celluloſa; viſcera; and cavities of the viſcera of the whole body; and **CONVEYED** into the thoracic duct. **USE**, to return the ſuperfluous nutritious fluid, the vapours of cavities, and ſubſtances applied to the ſkin, to the thoracic duct.

THE VAPOUR OF THE SHEATHS OF THE NERVES.

The aqueous vapour contained in the vagina and between the fibrils of the nerves. **SECRETORY ORGAN**, the arteries of the ſheath. **USE**, to moiſten the nervous fibrils.

FLUIDS PROPER TO EACH PART.

IN THE CAVITY OF THE CRANIUM.

THE VAPOUR IN THE VENTRICLES OF THE BRAIN. A thin vapour contained in the cavity of the ventricles of the brain, and **SECRETED** by the exhaling arteries of the choroid plexus. **USE**, to prevent the concretion of the ventricles, and keep the medulla moiſt.

IN THE CAVITY OF THE NOSTRILS.

THE MUCUS OF THE NOSTRILS. The mucus SECRETED by the muciparous glands of the pituitary membrane, lining the ſeptum and conchæ of the noſtrils. USE, to preſerve the nervous papillæ of the olfactory nerves moiſt, and to moderate exceſſive ſenſibility.

IN THE CAVITY OF THE MOUTH.

THE SALIVA. A fluid ſecreted by the ſalivary glands into the mouth. THE SECRETORY ORGAN is compoſed of the parotid; ſub-maxillary; and ſub-lingual glands. USE, to augment the taſte of the food; to mix with, diſſolve, and reſolve the food into its principles; and to moderate thirſt.

IN THE CAVITY OF THE FAUCES.

THE MUCUS OF THE FAUCES. A mucus ſecreted by the muciparous glands of the tonſils, pharynx, &c. USE, to lubricate the fauces.

IN THE EYES.

THE AQUEOUS HUMOUR OF THE EYE. The very limpid water which fills the anterior and poſterior chambers of the eye. SECRETORY ORGAN, the floating veſſels of the corpus ciliare, and exhaling veſſels of the iris. USE, to diſtend the cornea;

nea; retain the cryſtalline lens and vitreous humour in their places; and to tranſmit the focus of the rays of light to the cryſtalline lens.

THE CRYSTALLINE LENS. A lentiform, pellucid, cellular body, diſtended by a very limpid aqueous fluid, encloſed in a membranous capſule, and ſituated in a depreſſion in the anterior ſurface of the vitreous humour. USE, to tranſmit and refract the focus of the rays of light to the vitreous humour.

THE VITREOUS HUMOUR. The pellucid vitriform body, which fills the whole bulb of the eye behind the cryſtalline lens. COMPOSED of ſmall cells diſtended with a limpid water. USE, to expand the bulb, and tranſmit and moderately augment the focus of the rays of light from the cryſtalline lens to the retina.

THE WATER IN THE CAPSULE OF THE CRYSTALLINE LENS. SECRETED by the pellucid branches of the artery of the cryſtalline lens. USE, to prevent the concretion of the cryſtalline lens with its capſule.

THE PIGMENT OF THE IRIS. The coloured mucus, which covers the anterior and poſterior ſurface of the iris. USE, to reflect the rays of light.

THE PIGMENT OF THE CHOROID MEMBRANE. The black or browniſh mucus, which covers the anterior ſurface of the choroid membrane, and the interior of the corpus ciliare.

The tears. A limpid fluid ſecreted by the lachrymal gland, and flowing on the ſurface of the eye. **Use**, to moiſten the ſurface of the eye and eyelids.

The juice of Meibomius's glands. The unctuous humour ſecreted by the ſebaceous glands of Meibomius, and lubricating the tarſi of the eyelids. **Use**, to lubricate the tarſi of the eyelids, and involve the ſaline acridity of the tears.

IN THE CAVITY OF THE EARS.

The cerumen, or wax of the ears. The bitter ceraceous fluid ſecreted by the ceruminous glands of the meatus auditorius externus. **Use**, to lubricate the ſenſible membrane of that canal, and to prevent inſects from entering.

The water of the labyrinth. An inſipid water contained in the cavity of the tympanum. **Use**, to preſerve the nervous fibrils of the auditory nerve ſoft and moiſt, and to moderate the tremors of ſounds.

IN THE NECK.

The juice of the thyroid gland. Of a yellowiſh white colour, eſpecially in infants. **Use**, not known.

The mucus of the œsophagus. Secreted by the muciparous glands, ſituated in the cellular membrane. **Use**, to lubricate the cavity of the œſophagus, and prevent the concretion of its ſides.

IN THE CAVITY OF THE THORAX.

THE MUCUS lining the internal ſurface of the *trachea, bronchia,* and *veſiculæ pulmonales.* SECRETORY ORGAN, the muciparous glands ſituated under the internal membrane of thoſe parts. USE, to prevent the ſurface of the trachea, bronchia, and veſiculæ pulmonales from becoming dry by the continual paſſing of the air.

THE VAPOUR IN THE CAVITY OF THE THORAX. A vapour which exhales from the exhaling veſſels of the pleura of the lungs and ribs, into the cavity of the thorax. USE, to preſerve the pleura ſoft, moiſt, and flexile; and to defend and prevent it from the friction of, and concretion with, the lungs.

THE VAPOUR OR LIQUOR PERICARDII. Secreted by the arterious exhaling veſſels, which open upon the external ſurface of the heart and internal of the pericardium. USE, to prevent the concretion of the heart with the pleura; to diminiſh the friction; and preſerve the parts ſoft.

THE JUICE OF THE THYMUS GLAND. A milky juice ſecreted by the arteries opening into the cells of this gland. USE, not known.

IN THE BREASTS.

THE MILK OF THE BREASTS. A white, ſweetiſh fluid, ſecreted by the glandular fabric of the breaſts of women. **Use**, to be an aliment to new-born children.

IN THE ABDOMEN.

The gastric juice. A limpid colourleſs fluid, ſecreted by the exhaling veſſels of the very numerous arteries, which bedew every part of the ſtomach. **Use**, to digeſt the food.

The pancreatic juice. The limpid juice ſecreted by this gland, and conveyed through its excretory duct into the duodenum. **Use**, to aſſiſt in the formation of chyle.

Bile. A yellowiſh-green bitter juice, ſecreted by the glandular ſubſtance of the liver, and conveyed by the biliary ducts, in part, into the duodenum, and in part into the gall-bladder: hence cyſtic and hepatic bile. **Use**, to extricate the chyle from the digeſted maſs of food; to ſtimulate the inteſtines; and to prevent the abundance of mucus and acidity in the primæ viæ.

Chyle. A white fluid, ſeparated from the food in the primæ viæ, and obſerved ſome hours after eating in the lacteal veſſels of the meſentery, and in the thoracic duct. **Use**, to form the blood.

The enteric juice. A limpid liquor, ſecreted by the exhaling arteries in the whole courſe of the ſmall and large inteſtines. **Use**, to aſſiſt in digeſtion; and to cleanſe and moiſten the inteſtines.

The mucus of the primæ viæ. Secreted by the muciparous glands ſituated under the villous coat of the primæ viæ. Use, to lubricate that canal.

The vapour or fluid in the cavity of the abdomen. An aqueous vapour, ſecerned by the exhaling arteries of the peritoneum. Use, to preſerve moiſt and prevent the concretion of the abdominal viſcera.

Urine. A ſaline liquid, of a citrine colour, ſecreted in the kidneys, and dropping down from them guttatim through the ureters into the cavity of the urinary bladder. Use, to liberate the body from the ſuperfluous water, &c.

The mucus of the bladder. Secreted by the muciparous glands ſituated under the innermoſt membrane. Use, to lubricate and defend the internal and very ſenſible ſurface of the urinary bladder.

IN THE PARTS OF GENERATION IN MEN.

The mucus of the urethra. Secreted by the muciparous glands ſituated under the internal membrane. Use, to lubricate and defend the very ſenſible ſurface of the urethra againſt the acridity of the urine.

The smegma of the glans penis. An unctuous humour, ſecreted by the ſebaceous follicles on the ſurface of the glans and prepuce. Use, to lubricate and defend the ſenſible ſurface of the glans, and prevent its concretion with the prepuce.

THE VAPOUR OF THE TUNICA VAGINALIS TESTIS. The aqueous vapour, which exhales from the arteries into the cavity of the tunica vaginalis teſtis. USE, to prevent the concretion of the teſtes with the tunica vaginalis, and preſerve them moiſt.

THE LIQUOR OF THE PROSTATE GLAND. A milky juice, ſeparated by the arteries of the proſtate gland, and ſent through its ducts, *ſub coitu*, into the urethra with the ſemen. USE, to ſerve as a vehicle to the ſemen.

THE SEMEN. The prolific liquor ſecreted in the teſtes, and carried through the epididymis and vas deferens into the veſiculæ ſeminales. USE, to be emitted, *ſub coitu*, into the female vagina, and there, by its aura, to penetrate to, and impregnate, the ovulum in the female ovarium.

IN THE PARTS OF GENERATION IN WOMEN.

THE SMEGMA OF THE LABIA AND VULVA. The unctuous juice ſecreted by the ſebaceous glands, and covering the internal ſurface of the labia and nymphæ. USE, to lubricate their ſenſible ſurface, and prevent any irritation *poſt mictum*.

THE MUCUS OF THE VAGINA. Secreted by the muciparous glands under the internal membrane.

brane. Uſe, to lubricate the vagina, leſt it be pained by friction, *ſub coitu*, and to prevent the concretion of its ſides.

The liquor of the cavity of the uterus. Secreted into it by the exhaling arterious veſſels. Consistence, in the virgin uterus, ſerous and turbid; in the gravid, milky. Uſe, to moiſten the cavity, and prevent its concretion.

IN THE ARTICULATIONS.

The synovia. An unctuous fluid, ſecreted by the internal membrane of the capſular ligaments ſurrounding the articulations of the bones. Uſe, to lubricate the cartilaginous ſurfaces of the articulatory bones, and facilitate their motions.

The juice of the bursæ mucosæ. An unctuous and ſomewhat mucilaginous juice, ſecreted by the veſſels of the internal membrane of the burſæ mucoſæ. Uſe, to lubricate the tendons for motion.

IN THE BONES.

The marrow of bones. The oily ſubſtance ſecreted by the arteries of the internal perioſteum, and contained in the medullary cavities of the long bones, and ſpongy ſubſtance of others.

FLUIDS OF THE COMMON INTEGUMENTS.

The mucus of Malpighi, or rete mucosum. The mucus ſituated between the epidermis and cutis of the whole body, and ſecreted by the arterious veſſels of the ſkin. USE, to conglutinate the epidermis to the cutis; to moderate the ſenſe of touch; to moiſten the nervous cutaneous papillæ; and give the external colour to the body; hence it is *white* in Europeans, *black* in Æthiopians, &c.

THE OIL OF THE ADIPOSE MEMBRANE. Secreted by the arteries of the cellular membrane. USE, to facilitate muſcular motion.

SWEAT. The aqueous perſpirable matter excreted through the exhaling arteries of the ſkin. USE, to keep the ſkin moiſt.

A
GLOSSARY,
OR
EXPLANATION
OF
ANATOMICAL TERMS.

A.

ABDŌMĔN. *The cavity of the belly*; from *abdo* to hide, as including the inteſtines and other viſceera.

ACETĀBŬLUM. *The cavity which receives the head of the thigh bone*; from *acetum* vinegar: ſo called, becauſe it repreſents the acetabulum or ſaucer of the ancients, in which vinegar was held for the uſe of the table.

ACĬNI. *The glands of the liver*; from *acinus* a grape.

ACRŌMĬON. *A proceſs of the ſcapula*; from ακρος extremity, and ωμος the ſhoulder.

ADENŎLŎGY. *The doctrine of the glands*; from αδην a gland, and λογος a diſcourſe.

AMNĬON. *A membrane that ſurrounds the fœtus, which is ſoft and ſhaggy*; from αμνιος a lamb's ſkin.

AMPHYARTHRŌSIS. *A ſpecies of connexion of bones, which admits of an obſcure motion*; from αμφω both, and αρθρωσις an articulation.

Anastomōsis. *The communication of veſſels with one another*; from ανα through, and ϛομα a mouth.

Anatomy. *The diſſection of the human body*; from ανα, and τεμνω to diſſect.

Ancon. *The elbow*; from αγκων, from αγκαζομαι to embrace, απο τȣ αγκεισθαι ετερω οϛεω το οϛεον, becauſe the bones meeting, and being there united, are folded one into another.

Anconeus. *A muſcle*; ſo called from αγκων the elbow.

Anconoid. *Proceſs of the cubit*; from αγκων the elbow, and ειδος ſhape.

Angiŏlŏgy. *The doctrine of the veſſels*; from αγγειον a veſſel, and λογος a diſcourſe.

Aorta. Αορτη; from αηρ air, and τηρεω to keep: *an artery* ſo called becauſe the ancients ſuppoſed that only air was contained in it. It may rather be derived from αειρω to convey, as ſerving to convey the blood to the reſt of the body.

Aponeurōsis. *A tendinous expanſion*; from απο from, and νευρον a nerve; from an erroneous ſuppoſition of the ancients, that it was formed by an expanſion of a nerve.

Apōphy̆sis. *A proceſs of a bone*; from αποφυω to proceed from. A ſynonym of proceſs.

Arachnōīdēs. *A net-like membrane*; from αραχνη a ſpider, and ειδος likeneſs.

Artery. From αηρ air, and τηρεω to keep; becauſe the ancients ſuppoſed that only air was contained in them.

Arthrodĭa. *A ſpecies of connexion of bones*; from αρθροω to articulate.

Arytænōīdēs. *The name of two cartilages of the larynx*; alſo applied to *ſome muſcles of the larynx*; from αρυταινα a funnel, and ειδος ſhape.

Astrăgălus. *A bone of the tarſus*; ſo called from its reſemblance to a die uſed in ancient games, from αςραγαλος a cockal or die.

Atlas. *The firſt vertebra of the neck*; ſo called, becauſe it ſuſtains the head; from the fable of Atlas being ſuppoſed to have ſupported the world; or from ατλαω to ſuſtain, becauſe it ſuſtains the head.

Azȳgos. *A term applied to parts without a fellow*, from α priv. and ζυγος a yoke, becauſe it has no fellow.

B.

Brăchĭum. *The arm*; hence *os brachii*, *brachialis externus*, &c. from βραχυς ſhort, becauſe in a well-proportioned man it is ſhorter from the ſhoulder to the hands than from the hip to the feet.

Brōnchĭa. *The ramifications of the trachea or windpipe*; from βρεχω to pour, becauſe the ancients believed that the fluids were conveyed into the ſtomach by the bronchia.

Bursa. *A bag*; from βυρσα: generally applied to the burſæ mucoſæ.

Bursălōgy. *The doctrine of the burſæ mucoſæ*; from βυρσα a bag, and λογος a diſcourſe.

C.

Calvărĭa. *The top of the cranium*; from *calvus* bald.

Cancĕlli. *Lattice work*; generally applied to the reticular ſubſtance in bones.

Cărdĭa. *The ſuperior opening of the ſtomach*; from καρδια the heart, becauſe it is ſituated near it.

Carōtid. *The name of ſome arteries of the neck and head*; from καροω to cauſe to ſleep; for, if tied with a ligature, the animal becomes comatoſe, or has the appearance of being aſleep.

Carpus. Καρπος; *the wriſt*.

CHŌRĬON. *The external membrane of the fœtus in utero.* Χωριον, from χωρεω to eſcape, becauſe it always eſcapes from the uterus with the fœtus.

CHOROID *membrane and plexus*; from χοριον the chorion, and ειδος likeneſs; ſo called on account of its many blood-veſſels reſembling the chorion.

CLAVĬCŬLA. *The clavicle or collar bone*, a diminutive of *clavis* a key; ſo called from its reſemblance to an ancient key.

CLINOID. *Four proceſſes of the ſella turcica of the ethmoid bone*; are ſo called, from κλινη a bed, and ειδος likeneſs, from their ſuppoſed reſemblance to a couch.

CLĪTŎRIS. *A part of the female pudenda, encloſed by the labia majora*; from κλειω to encloſe or hide.

CŌLON. *The firſt of the large inteſtines*; from κωλον, quaſi κοιλον, from κοιλος hollow; it generally being found empty, and full of wind, in the dead body.

CŌNDY̆LE. *An eminence in any of the joints*; κονδυλος, from κονδυ an ancient cup ſhaped like a joint.

CORĂCO. Names compounded with this word belong to muſcles, which are attached to the coracoid proceſs of the ſcapula; as coraco-hyoideus, &c.

CORĂCOID *proceſs of the ſcapula*; from κοραξ a crow, and ειδος reſemblance, it being ſhaped like the beak of a crow.

CORŌNARY. From *corona* a crown. *The veſſels of the heart, ſtomach*, &c. are ſo called becauſe they ſurround the parts in the manner of a crown.

CORŌNOID. *A proceſs* ſo called, from κορωνη a crow, and ειδος likeneſs, from its reſemblance to a crow's beak.

CŌTY̆LOID *cavity of the os innominatum, which receives the head of the thigh bone*; from κοτυλη the name of an old meaſure, and ειδος reſemblance.

CRĀNĬUM. *The ſkull*; κρανιον, quaſi καρανιον, from καρα the head.

CREMASTER. *A muſcle* ſo called; from κρεμαω to ſuſpend, becauſe it ſuſpends the teſticle.

CRĪBRĪFORM, or *ethmoid bone of the ſkull*; from *cribrum* a ſieve, it being perforated like a ſieve.

CRICOĪD. *Annular, round, like a ring*; from κρικος a ring, and ειδος likeneſs.

CRURA. The plural of *crus*, a leg or root; applied to ſome parts of the body from their reſemblance to a leg or root, as crura cerebelli, &c.

CUBOĪDES. *A bone of the foot*; from κυβος a cube, and ειδος likeneſs; becauſe it reſembles a cube.

CUNEIFORM. *Some bones are ſo called*; from *cuneus* a wedge, and *forma* likeneſs; being ſhaped like a wedge.

D.

DARTOS. *A muſcle of the ſcrotum*; from δερω to excoriate.

DELTOID. *A muſcle reſembling the Greek letter* Δ; from Δ and ειδος reſemblance.

DIAPHRAGM. *The muſcle which ſeparates the thorax from the abdomen*; from διαφραττω to divide.

DIARTHRŌSIS. *A moveable connexion of bones*; from διαρθροω to articulate.

DIGASTRIC *muſcle*; from δις twice, and γαστηρ a belly; having two bellies.

DIPLÖE. *The ſpongy ſubſtance between the two tables of the ſkull*; from διπλοω to double.

DUODĒNUM. *The firſt portion of the ſmall inteſtine*; ſo called becauſe the ancients ſuppoſed that it did not exceed the breadth of twelve fingers; from *duodenus*, conſiſting of twelve.

DURĂ MATĔR. *The outermoſt membrane of the brain*; called *dura*, becauſe it is much harder than the other membranes, and *mater*, from the ancients ſuppoſing it was the ſource of all the other membranes.

E.

EMBRY̆O. *The child in the womb* is ſo called before the fifth month, after which it is termed *fœtus*; from εμβρυω to bud forth.

ENARTHRŌSIS. *An articulation of bones*; from εν in, and αρθρον a joint or articulation.

ENTĔRIC. *Belonging to the inteſtines*; from εντερον an entrail or inteſtine.

EPIDERMIS. *The ſcarf or outermoſt ſkin*; from επι upon, and δερμα the ſkin.

EPIDIDY̆MIS. *The ſmall oblong body which lies above the teſticles*; from επι upon, and διδυμος a teſticle.

EPIGĀSTRIC. *The ſuperior part of the abdomen*; from επι upon, and γαςηρ the ſtomach.

EPIGLŎTTIS. *A cartilage of the larynx* ſo called; from επι upon, and γλωττις the aperture of the larynx, being ſituated upon the glottis.

EPĪPHY̆SIS. *A portion of bone growing upon another bone, but ſeparated from it by cartilage*; from επι upon, and φυω to grow.

EPĪPLOON. *The membranous viſcus of the abdomen, which covers the inteſtines, and hangs to the bottom of the ſtomach*; from επιϖλεω to ſwim upon.

EPISTROPHÆUS. *The ſecond vertebra of the neck*; from επιςροφαω to turn round, becauſe the head is turned upon it.

ETHMOID *bone of the cranium*; ſo called, from ηθμος a ſieve, and ειδος reſemblance, it being perforated like a ſieve.

F.

FASCĬA. *An expanſion of a muſcle, encloſing others like a band*; from φασκια a band.

FALCIFORM. *Shaped like a ſcythe*; from *falx* a ſcythe.

Fascĭcŭlus. *A little bundle.*

Fauces. The plural of *faux*, the top of the throat.

G.

Galactophŏrous *ducts of the breaſts of women*; from γαλα milk, and φερω to carry, becauſe they convey the milk to the nipples.

Ganglĭon. Γαγγλιον, a knot in the courſe of a nerve.

Gastrocnēmĭus. *The muſcle which forms the thick of the leg*; from γαςηρ a belly, and κνημη the leg.

Genĭo. Names compounded with this word belong to muſcles which are attached to the chin, as Genio-gloſſus—Genio-hyoideus—Genio-pharyngeus, &c.; from γενειον the chin.

Genu. *The knee*; from γονυ, παρα το εις γην νευειν, becauſe by it the body is bent towards the earth.

Ginglȳmus. *An articulation*; from γιγγλυμος a hinge.

Glēnoid *cavity*; from γληνη a cavity, and ειδος reſemblance.

Glomer. *A convoluted bundle of veſſels*; generally applied to the lymphatic glands.

Glosso. Names compounded with this word belong to muſcles, from their being attached to the tongue; as Gloſſo-pharyngeus—Gloſſo-ſtaphylinus, &c. from γλωσσα the tongue.

Glottis. *The ſuperior opening of the larynx at the bottom of the tongue*; from γλωττα the tongue.

Glutæus. *The name of a muſcle*; from γλουτος the buttocks.

Gomphōsis. Γομφωσις *inclavation, a ſpecies of immoveable connexion of bones*; from γομφος a nail, becauſe one bone is fixed in another bone like a nail in a board.

H.

Harmōnia. *A ſpecies of immoveable connexion of bones*; from ἁρω to fit together.

Hĕlix. *The outward circle of the ear*; from ειλω to turn about.

Hēpar. *The liver.* Ἡπαρ, *an abdominal viſcus.*

Hyăloid *membrane of the eye*; from ὑαλος glaſs, and ειδος likeneſs; ſo called from its tranſparent and glaſſy appearance.

Hygrŏlŏgy. *The doctrine of the fluids*; from ὑγρος a fluid, and λογος a diſcourſe.

Hўmen. *The membrane ſituated at the entrance of the virgin vagina*; from ὑμην hymen.

Hyo. Names compounded with this word belong to muſcles which are attached to the os-hyoides, as hyo-gloſſus —hyo-pharyngeus—hyo-thyroides; from ὑοειδες the os hyoides.

Hyoidēs. *A bone of the tongue ſo called from its reſemblance to the Greek* υ; from υ and ειδος reſemblance.

Hypochŏndrĭum. *That part of the body which lies under the cartilages of the ſpurious ribs*; from ὑπο under, and χονδρος a cartilage.

Hypogastric. *The lower region of the fore part of the abdomen*; from ὑπο under, and γαςηρ the ſtomach.

I.

Ilĕum. *A portion of the ſmall inteſtines*; from ειλεω to turn; being always convoluted.

Ilium. *Part of the os innominatum*, ſo called becauſe it ſupports the ειλεια or ſmall inteſtines.

Ischĭum. *The part of the os innominatum upon which we ſit*; from ισχυω to ſuſtain.

L.

Lacūna. *The excretory duct of the glands of the urethra and vagina*; from *lacus* a channel.

Lamdoidal *ſuture*; ſo called becauſe it is ſhaped like the letter λ; from λ and ειδος reſemblance.

LARYNX. *The ſuperior part of the windpipe*; λαρυγξ the larynx.

M.

MASSĒTER. *A muſcle of the face, which aſſiſts in the action of chewing*; from μασσαομαι to chew.

MASTOID *proceſs*; ſo called, from μαςος a breaſt, and ειδος likeneſs, being ſhaped like a nipple or breaſt.

MEDIASTĪNUM. *The production of the pleura, which divides the thorax into two cavities*; from *medium* the middle, *quaſi in medio ſtare.*

MESENTERY. *The membranes to which the inteſtines are attached*; from μεσος the middle, and εντερον an inteſtine, becauſe it is in the middle of the inteſtines.

MESOCŌLON. *That part of the meſentery in the middle of the colon*; from μεσος the middle, and κολον the colon.

METACARPUS. *That part of the hand between the carpus and fingers*; from μετα after, and καρπος the wriſt.

METATARSUS. *That part of the foot between the tarſus and toes*; from μετα after, and ταρσος the tarſus.

MYLO. Names compounded with this word belong to muſcles, which are attached near the grinders, as *mylohyoides*; *mylo-pharyngeus*, &c.; from μυλη a grinder tooth.

MYŎLŎGY. *The doctrine of the muſcles*; from μυς a muſcle, and λογος a diſcourſe.

N.

NEURŎLŎGY. *The doctrine of the nerves*; from νευρον a nerve, and λογος a diſcourſe.

O.

ODONTOID, *or tooth-like proceſs*; from οδους a tooth, and ειδος reſemblance.

ŒSOPHĂGUS. *The canal leading from the pharynx to the ſtomach*; from οιω to carry, and φαγω to eat; becauſe it carries the food into the ſtomach.

Olecrănon. *The elbow or head of the ulna*; from ωλενη the cubit, and κρανον the head.

Omentum. *An abdominal viſcus*; ſo called from *omen* a gueſs; becauſe the ſoothſayers propheſied from the inſpection of this part.

Omo. Names compounded with this word belong to muſcles which are attached to the ſcapula, as *omo-hyoideus*, &c. from ωμος the ſhoulder.

Omoplāta. *The ſcapula or ſhoulder-blade*; from ωμος the ſhoulder, and πλατυς broad.

Orgasm. *A violent ſalaciouſneſs, attended with turgeſcence in the parts*; from οργαω to deſire vehemently.

Osteŏlŏgy. *The doctrine of the bones*; from οςεον a bone, and λογος a diſcourſe.

P.

Pancreas. *A viſcus of the abdomen*; ſo called from its fleſhy conſiſtence; from παν all, and κρεας fleſh.

Parenchȳma. *The ſubſtance connecting together the veſſels*, &c. of the lungs is ſo called, from παρεγχυω to pour through.

Parotid *gland*; from παρα near, and ους the ear; becauſe it is ſituated near the ear.

Pelvis. *A bony cavity ſhaped like a baſon*; from πελυς a baſon.

Pericardĭum. *The membrane which ſurrounds the heart*; from περι around, and καρδια the heart.

Pericranĭum. *The membrane which covers the bones of the ſkull*; from περι around, and κρανιον the cranium or head.

Periostĕum. *The membrane which ſurrounds the bones*; from περι around, and οςεον a bone.

Peristaltic *motion of the inteſtines*; from περιςελλω to contract.

PERITONEUM. *The membrane lining the abdomen, and covering its viſcera*; from ϖεριτεινω to extend around.

PHALANX. *The bones of the fingers and toes* are called phalanxes, from their regular ſituation, like a φαλαγξ, or army of ſoldiers.

PHARYNX. *A membranous bag at the end of the mouth*; απο το φερειν, becauſe it conveys the food into the ſtomach.

PHRENIC or *diaphragmatic nerve.* Φρενες the diaphragm; from φρην the mind, becauſe the ancients ſuppoſed it to be the ſeat of the mind.

PHYSIŎLŎGY. *That part of natural hiſtory which treats of the actions and functions of an animated body*; from φυσις nature, and λογος a diſcourſe.

PĬA MATĔR. *The innermoſt membrane of the brain*; ſo called, becauſe it embraces the brain as a good mother folds her child.

PLACENTA. *The after-birth*; from ϖλακυς a cake, from its reſemblance to a cake.

PLATȲSMA-MYOIDES. *A muſcle of the neck*; from ϖλατυς broad, μυς a muſcle, and ειδος reſemblance.

PLEURA. *The membrane lining the thorax*; ϖλευρα the ſide.

PLEXUS. *A kind of net-work of veſſels or nerves*; from *plecto*, to weave together.

PRÆPUCE, or *foreſkin of the penis*; from *præputo* to cut off before, becauſe the eaſtern nations uſually cut it off.

PSOAS. *A muſcle* ſo called; from ψοα the loin, being ſituated in the loins.

PTERYGOID *proceſs*; from ϖτερυξ a pen or wing, and ειδος likeneſs; ſo called from its likeneſs to a pen or wing.

PYLŌRUS. *The lower orifice of the ſtomach, which opens into the inteſtines*; from ϖυλοω to guard an entrance, becauſe it guards as it were the entrance of the bowels.

RAPHĒ.

R.

Raphē. *A ſuture.* ʽΡαφη, from ῥαπτω to ſew.

Renēs. *The kidneys,* απο του ῥειν, becauſe through them the urine flows.

Retĭna. *The net-like expanſion of the optic nerve, on the inner ſurface of the eye*; from *rete* a net.

Rhomboidēs. *A muſcle ſo called from its ſhape*; from ῥομβος a geometrical figure, whoſe ſides are equal but not right angled, and ειδος a likeneſs.

Rotŭla. *The knee-pan*; a dim. of *rota* a wheel, from its ſhape.

S.

Sacrum. *A bone ſo called*; from *ſacer* ſacred, becauſe it was once offered in ſacrifices.

Salvatella. *A vein of the foot*, ſo called becauſe it was thought the opening it preſerved health, and cured melancholy ; from *ſalvo* to preſerve.

Sanguis. *The blood*; απὸ του σαειν γυια, becauſe it preſerves the body.

Sartorĭus. *A muſcle ſo called, becauſe taylors croſs their legs with it*; from *ſartor* a taylor.

Scāpha. *The depreſſion of the outer ear before the anti-helix*; from σκαφη a little boat or ſkiff; from σκαπτω to dig, becauſe ſkiffs were formerly only trees made hollow.

Scaphōidēs. *A bone of the carpus,* ſo called from its reſemblance to a ſkiff; from σκαφη a ſkiff, and ειδος a likeneſs.

Sclerotic. *A term applied to the outermoſt or hardeſt membrane of the eye*; from σκληροω to make hard.

Sella turcĭca. Part of the ſphænoid is ſo called from its ſuppoſed reſemblance to a Turkiſh ſaddle.

Sesămoid *bones*; from σησαμη an Indian grain, and ειδος a likeneſs, from their reſemblance to the ſemen ſeſami.

Sigmoid. *Parts are ſo called from their reſemblance to the letter* Σ; from Σ the letter Sigma, and ειδος likeneſs.

Sphænoid bone; from σφην a wedge, and ειδος likeneſs, it being ſhaped like a wedge.

Sphincter. *The name of ſeveral muſcles, whoſe office it is to ſhut up the aperture around which they are placed*; from σφιγγω to ſhut up.

Splanchnŏlŏgy. *The doctrine of the viſcera*; from σπλαγχνον an entrail, and λογος a diſcourſe.

Symphy̆sis. *A connexion of bones*; from συμφυω to grow together.

Synarthrōsis. *A connexion of bones*; from συν with, and αρθρον a joint.

Synchondrōsis. *A ſpecies of union of bones by means of cartilage*; from συν with, and χονδρος a cartilage.

Syndesmŏlŏgy. *The doctrine of the ligaments*; from συνδεσμος a ligament, and λογος a diſcourſe.

Syndesmōsis. *A ſpecies of union of bones by means of ligament*; from συνδεσμος a ligament.

Syneurōsis. *A ſpecies of connexion of bones by means of membrane*; from συν with, and νευρον a nerve; becauſe membranes, ligaments, and tendons, were by the ancients conſidered as nerves.

Syssarcōsis. *A ſpecies of connexion of bones by means of muſcle*; from συν with, and σαρξ fleſh.

Systŏle. *The contractile motion of the heart and arteries*; from συϛελλω to contract.

T.

Tendon. From τεινω to extend.

Thēca. The ſpinal canal is called *theca vertebralis*; from θηκη from θημι to put.

Thorax. Θωραξ. *The breaſt or cheſt*; from θορεω to leap, becauſe in it the heart beats.

THYRO. Names compounded with this word belong to muſcles which are attached to the thyroid cartilage.

THYROID *cartilage*; from θυρεος a ſhield, and ειδος likeneſs, becauſe it is ſhaped like a ſhield.

TRACHEA. *The wind-pipe*; ſo called from its roughneſs, from τραχυς rough.

TRAPEZOID *bones of the carpus*; from τραπεζιον a four-ſided figure, and ειδος likeneſs.

TROCHANTER. *A proceſs of the thigh-bone*, ſo called from τρεχω to run, becauſe the muſcles inſerted in theſe parts perform the office of running.

TROCHLĔA. *A kind of cartilaginous pulley*, through which the tendon of one of the muſcles of the eye paſſes; from τρεχω to run.

TROCHOIDES. *A ſpecies of articulation of bones*; from τροχος a wheel, and ειδος likeneſs; becauſe one bone moves round upon another, like a wheel upon its axle-tree.

U.

ULNA. *A name for the cubit*; from ωλενη the cubit.

URĒTER. *The canal which conveys the urine from the kidney to the bladder*; from ουρον urine.

URĒTHRA. *The paſſage through which the urine paſſes from the bladder*; from ουρον the urine.

UVEA. *The poſterior lamina of the iris*, ſo called becauſe in beaſts (which the ancients chiefly diſſected) it is of the colour of unripe grapes; from *uva* an unripe grape.

UVULA. *The glandular ſubſtance which hangs down from the middle of the ſoft palate*; ſo called from its reſemblance to a grape. A dim. of *uva* a grape.

V.

VALVES. *Little membranes, that prevent the return of the blood in the veins and arteries*; from *valvæ* folding doors.

VERTEBRÆ. *The bones of the ſpine* are ſo called, from *verto* to turn.

VOMER. *A bone of the noſe,* ſo called from its reſemblance to a ploughſhare; from *vomo* to turn up.

X.

XIPHOID *cartilage,* ſo called from its reſemblance to a ſword; from ξιφος a ſword, and ειδος likeneſs.

Z.

ZYGŌMA. *The cavity under the zygomatic proceſs of the temporal bone*; from ζυγος a yoke, becauſe it tranſmits the tendon of the temporal muſcle like unto a yoke.

THE END.

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